

GEM[®] Artline[™] by CCP

User's Guide



 DIGITAL RESEARCH[®]

GEM[®] *Artline* by CCP[™]

User's Guide

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GEM® Artline™ User's Guide
First Edition: October 1988

Introduction

GEM[®] Artline™ brings the power of professional illustrating to the personal computer. This advanced graphics application lets you create designer-quality illustrations, headlines, logos—almost any type of graphic—quickly and easily. You can create your own designs or trace existing illustrations, then modify them to suit your needs.

GEM Artline is the ideal tool for graphic designers, artists, illustrators, desktop publishers, and anyone else who works with text and graphics. This guide describes many of the capabilities of GEM Artline and how to use these capabilities to accomplish basic tasks. The *GEM Artline Reference Guide* describes each component of GEM Artline in detail. You may want to consult the Reference Guide as you go through this User's Guide.

We hope you enjoy working with GEM Artline.

Features

Major features of GEM Artline include:

- Advanced drawing functions, including complex curve drawing and ready-made drawing primitives
- Graphic capabilities such as copy, move, rotate, stretch, scale, mirror, and skew for both text and graphic elements
- User-definable gray scales and halftones
- 16 color settings, and color saturation control
- 4-color (CMYK) and spot color separation for color printing
- Symbol creation, for turning frequently-used art into ready-made symbols that can be added to any illustration
- Postscript® file format support
- Image tracing, which lets you reproduce existing artwork such as photographs, sketches, diagrams—even text. Start with a scanned image or picture created using any of the many popular graphics applications from which GEM Artline accepts input. These include GEM® Paint™, GEM® Draw Plus™, PC Paintbrush +® and Publisher's Paintbrush®.

You can trace all or part of an image, add to it, modify it, or use it in any other illustration.

You can use your GEM Artline with many desktop publishing applications, including: GEM® Desktop Publisher™, Xerox® Ventura Publisher®, and Aldus® PageMaker®.

The Advantages of an Illustrator Program

GEM Artline frees you from the limitations of conventional PC graphics applications, such as display resolution dependency, font constraints, and printer limitations. Regardless of the display you use for creation, your pictures are crisp, clean, and free of jagged lines. There is no loss of quality, even on phototypesetters such as the Linotronic[®] 300, which has a graphic resolution of 2480 dots per inch (dpi.)

With GEM Artline, you can now obtain special text and graphic effects, using standard dot matrix and laser printers. These kinds of effects were formerly available only with expensive hardware.

About this Guide

This guide is divided into three parts:

Part I, "Installation," explains how to prepare for installation, how to run the program that installs GEM Artline, what directories are created, and what files are copied onto your hard disk. Part I also describes the steps needed to install fonts for use with GEM Artline.

Part II, "Tutorial," is a presentation of GEM Artline's capabilities and an introduction to the program's operations. It takes you step-by-step through the basic principles and then shows you some creative ways to use GEM Artline.

Part III, "Tips and Techniques," contains exercises designed to reinforce the skills taught in the Tutorial and help you use GEM Artline effectively. You'll learn how to produce special effects like shadowed text and words arranged in a circle, as well as efficient drawing techniques.

Terminology

The term *file* is used to refer, in general, to any collection of information on disk that has a name. A *drawing* usually refers to a graphic file that is "object-oriented." An *image* usually refers to graphic that is a bitmap. *Artwork* is a general designation for a graphic, regardless of the method used to create it. A *document* can contain a combination of text and graphic elements, but it is usually a text file.

Some common terms used in describing computer graphics are:

Bitmap: A graphic image made up of a matrix or "map" of pixels, or dots. .IMG files and other images you trace in GEM Artline are bitmaps. These files can be created using GEM Paint, GEM Scan, and other programs that provide .IMG files as output.

Element: A graphic or text segment that is usually part of a larger illustration.

Pixels: Any of the thousands of individual dots that make up a picture on a video display.

Object: A text or graphic element that can be manipulated using GEM Artline.

Object-Oriented File: A picture file in which elements are stored as sets of coordinates rather than as a bitmap. These files can be created using GEM Draw Plus and similar programs that create .GEM files.

Screen Resolution: The sharpness of the image on a video display monitor. Display resolution is expressed as the number of horizontal pixels \times the number of vertical pixels. For example, the resolution of an IBM® EGA monitor is 640 \times 350.

Print Resolution: Print quality, expressed in dots per inch (dpi). For example, the resolution of text or graphics printed on a Hewlett-Packard® LaserJet II™ is 300 dpi.

Note: Images created with conventional paint and scanner applications are *resolution dependent*—that is, their quality is limited to the resolution of the display used to create them.

Conventions

This guide uses different fonts, typefaces, text attributes, and symbols to provide a visual distinction between different types of information.

New terms and manual names are italicized. Occasionally italics are used for emphasis – for example, “... do *not* quit GEM Artline before saving your picture.”

Command names have initial capitals and are shown in boldface type, for example, the **Open** command. Some of the commands listed in the menus are followed by three dots (...). The dots indicate that a *dialog* appears when you choose the command.

GEM Artline uses dialogs to provide or request information. Thus, when you choose the **Open** command, GEM Artline displays the ITEM SELECTOR dialog so you can enter the name of the file you want to open. Note that the dots are omitted from command names when they appear in the text. The ITEM SELECTOR dialog is described in the Appendix of the *GEM Artline Reference Guide*.

Characters that you are to type look like this:

GEM ARTLINE ↵

User input is always shown in upper case, but unless otherwise stated, you can enter it in either upper or lower case. The symbol ↵ represents the Enter (or Return) key.

The symbol ♦ represents the Alt Key.

System Requirements

Refer to your *GEM/3 Desktop Installation Guide* for a list of supported devices. Keep in mind these important requirements:

- Computer

The computer must have a hard disk that has at least 800K bytes of free space. More space may be needed depending your printer.

- Operating System

PC-DOS, MS-DOS® versions 2.0 and later, DR DOS™, Concurrent™ DOS 386 and Concurrent DOS /386 Multiuser Graphics Edition may be used.

- Memory

GEM Artline requires a minimum of 512K bytes of memory. We recommend using 640K bytes of main memory. GEM Artline also requires expanded memory in order to import images. For example, approximately 1.3M bytes (megabytes) of expanded memory are needed to load a full page of graphics. Consult your hardware dealer or system specialist for an appropriate memory expansion option for your system.

- Mouse and Tablet Devices

To use GEM Artline efficiently, your system must have a mouse or a graphics tablet.

- Output Devices

In addition to the output devices listed on the package and in the *GEM/3 Desktop Installation Guide*, output is also possible on phototypesetters, such as the Linotronic series, via PostScript files.

Driver packs for devices not listed here can be purchased directly from the manufacturer or from Digital Research®. Ask your local dealer or call Digital Research for more detailed information. Also, refer to the Device Driver Pack Order Form included in your GEM Artline package.

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Part I: Installation

This part of the *GEM Artline User's Guide* describes how to run INSTALL.APP, the program that installs GEM Artline onto your system. To help you visualize the process and check your results, the outcome of the installation is also described.

Your GEM Artline package includes the Bitstream® Fontware™ Installation Kit and the Charter® typeface outline. At the end of this section, you'll find some important information about generating high-quality fonts for use with GEM Artline.

Installing GEM Artline

To install GEM Artline onto your computer, you run a program called INSTALL.APP, which is on GEM Artline Program Disk #1. This program creates certain subdirectories and copies files to them so that GEM Artline can run on your computer.

Before You Begin

Installing GEM Artline is easy, but before you begin, you'll need to:

- Make one backup set of the original program diskettes, as allowed by the End-User License Agreement. Use the DISKCOPY command or other disk duplicating software to make the backup set. File copying programs will not duplicate the disks properly.

For example, to copy the contents of a disk in drive A to a disk in drive B, with DISKCOPY you'd type:

DISKCOPY A: B: ↵

- Install the GEM® Desktop™ on your computer, following the instructions in the *GEM/3 Desktop Installation Guide* or the brief instructions on the next page.
- If you have questions about using a mouse, or any other facet of the GEM interface, see the Appendix to the *GEM Artline Reference Guide* or the *GEM/3 Desktop User's Guide*.

Note: Even if you already have the GEM Desktop installed on your computer, you *must* install the version enclosed with this package. It provides new functions required by GEM Artline. All GEM programs already installed on your machine will continue to operate normally.

Quick GEM Desktop Installation

1. Insert the diskette labeled **GEM System Disk #1** in drive A and type:

A: `_`

2. When the A: prompt appears, type:

GEMSETUP `_`

and then follow the instructions on the screen. For detailed information about the GEMSETUP program and about GEM Desktop installation, refer to the *GEM/3 Desktop Installation Guide*.

Running INSTALL.APP

Once you've installed the GEM Desktop, you're ready to install GEM Artline. Follow these steps:

1. Start the GEM Desktop. Make sure that one window shows the disk icons. Insert the disk labelled **GEM Artline Program Disk #1** into drive A. Double-click on the icon for disk drive A. The window now shows the files on the disk in drive A.
2. Double-click on the icon labeled **INSTALL.APP**. The program displays a dialog confirming that GEM Artline is to be installed on your hard disk. Move the mouse pointer to the OK button and press the left mouse button or press `_` on the keyboard.



INSTALL.APP

If you have more than one hard disk, a dialog appears asking you to select the hard disk on which GEM Artline will be installed.

3. Insert the other installation disks as prompted. INSTALL.APP copies the program files onto your system. When all files have been copied, the installation is complete.

Installation Results

GEM Artline is installed in the \GEMAPPS directory, which is created when you install the GEM Desktop. This directory now contains the program file ARTLINE.APP.

INSTALL.APP also creates two directories within \GEMAPPS: \ARTWORK and \ARTWORK\SYMBOLS.

The \ARTWORK directory contains example Artline (.GEM) files. \ARTWORK\SYMBOLS contains several symbol file libraries which you'll use in the Tutorial. We recommend that you also use these directories for all of your pictures and symbol files, although you may use any directory you wish. However, unless you tell it otherwise, GEM Artline will automatically save your illustrations in these directories.

Installing Fonts

GEM Artline requires only one file per font for both your printer and display. Font files have the filename extension .AFF. GEM Artline constructs any size font from the .AFF file.

GEM Artline comes with .AFF files for Nimbus Serif, Nimbus Sans, and the Bitstream Charter typefaces—these are ready to use as soon as you install GEM Artline.

Charter and Nimbus Serif are classic serified faces similar to Dutch. Nimbus Sans is similar to the Swiss font. Other typefaces are available from your dealer or directly from Bitstream Inc.

With the Bitstream Fontware Installation Kit, you can create additional fonts for use with GEM Artline and other GEM applications. The Installation Kit is supplied with the Bitstream Charter typeface outline.

Note: You generate fonts for use with Artline by running the Fontware Installation Kit and creating PostScript printer fonts. The Installation Kit automatically generates Artline font (.AFF) files and places them in the \GEMAPPS\FONTS directory of your hard disk. *You must select the PostScript entry, regardless of your actual printer type.*

If you are not using a PostScript printer, you can delete all of the PostScript files (having the .PFI, .PFA, and .AFM extensions) that Fontware generates when creating the fonts. Remember, GEM Artline requires only the .AFF files for both screen and printer fonts.

Check the Bitstream Fontware brochure, included in your package, for information about the typefaces currently available. Note that you can also use Adobe® fonts and other PostScript-compatible fonts.

Detailed instructions for installing fonts for use with GEM applications are provided in the *Fontware Installation Guide*.

Certain fonts contain characters that do not render well in GEM Artline. The Goudy Old Style®, University, Cloister®, and Zapf Calligraphic fonts are among these.

Part II: Tutorial

This part of the *User's Guide* is a tutorial designed to show you, step-by-step, how to use many features of GEM Artline. The beginning of each section contains a learning goal for the section.

If you are familiar with other GEM graphics applications, you might want to skip over some sections. We recommend that you work through Section 3, "Getting Started," and Section 7, "Drawing Lines and Curves." These tutorials contain fundamental information about working with Artline. If you are unfamiliar with GEM applications consult the Appendix in the *GEM Artline Reference Guide*—it contains details about using some basic tools.

We hope you enjoy your first steps with GEM Artline.

Getting Started

In this section, you'll learn how to:

- start GEM Artline
- identify the GEM Artline screen components
- open pictures
- change your view of a picture
- save your pictures and exit GEM Artline

Starting GEM Artline

You can start GEM Artline from the GEM Desktop or from the operating system command line.



ARTLINE.APP

Starting from the GEM Desktop

When you open the GEM Desktop, it displays the contents of the GEMAPPS directory. Start GEM Artline by double-clicking on the ARTLINE.APP icon.

Starting from the Operating System

1. Move to the drive on your hard disk that contains the GEM Desktop. For example, if it's installed on drive C, type:

```
C: \
```

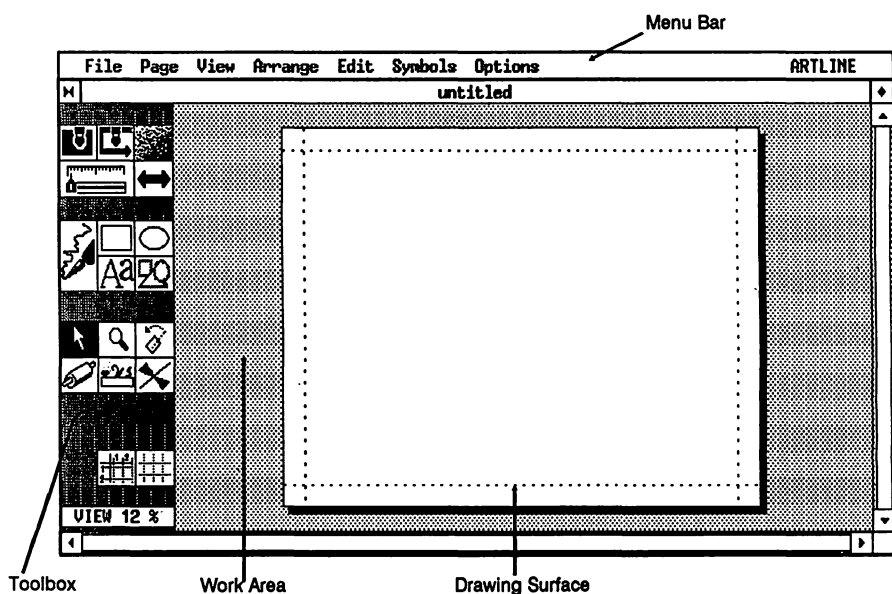
2. Type this command to make sure you're in the root directory:

```
CD \
```

3. Now start GEM Artline by typing:

```
GEM ARTLINE
```

GEM Artline Screen Components



As you can see from the picture above, the GEM Artline screen has four main components:

- Menu bar
- Toolbox
- Work area
- Drawing surface

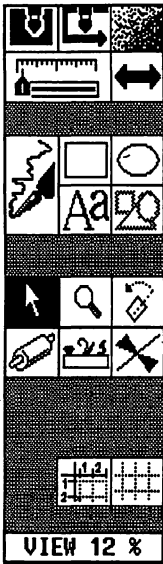
Each of these components is described in this section.

Menu Bar

The *menu bar* contains the names of the GEM Artline menus. When you move the pointer over a menu name, the menu drops down and displays a list of commands. Menu commands allow you to load and store pictures and symbols, to set and change options, and to modify existing picture elements. For complete information about each of the commands in the menus, refer to the *GEM Artline Reference Guide*.

From the GEM Desktop, you can change how menus are displayed—see your *GEM/3 Desktop User's Guide*.

Toolbox



The *toolbox* contains the tools, or functions, that you'll use most often. Each tool is represented by an icon, or picture. You select a tool by clicking on its icon. When selected, the icon becomes highlighted. Thus, you always know at a glance which tool is being used.

Sometimes, certain tools are unavailable. In this case, their icons appear dimmed.

The tools are organized by functionality into groups. The uppermost group controls line, color, and shading attributes. For example, the top left icon selects or changes the fill color of an element.

The tools used for drawing and entering text are contained in the second group of icons. The tools in the third group manipulate objects on the drawing surface.

The last two icons switch the rulers and the grid on and off.

The *view box* at the bottom of the toolbox displays the current view magnification level. Also, whenever you rotate or flip an element, the view box displays its angle in degrees (°).

Work Area and Drawing Surface

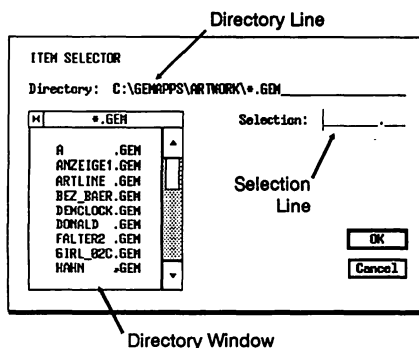
When you look at the GEM Artline screen, you see the *work area* and the *drawing surface*. It's important to remember that these are separate components of the screen.

The work area is the part of the GEM Artline window that is enclosed by the title bar, toolbox, and scroll bars. The work area is like a frame through which you view the drawing surface. The drawing surface (shown empty in the illustration on page 3-2) contains your picture. In many respects, it's like a sheet of paper.

You control how much of the drawing surface is visible in the work area at any time by setting the *view size*. Changing the view size is explained in "Viewing Pictures," later in this section.

Opening Pictures

To open a picture, select the **Open** command from the File Menu. This causes GEM Artline to display the ITEM SELECTOR dialog.

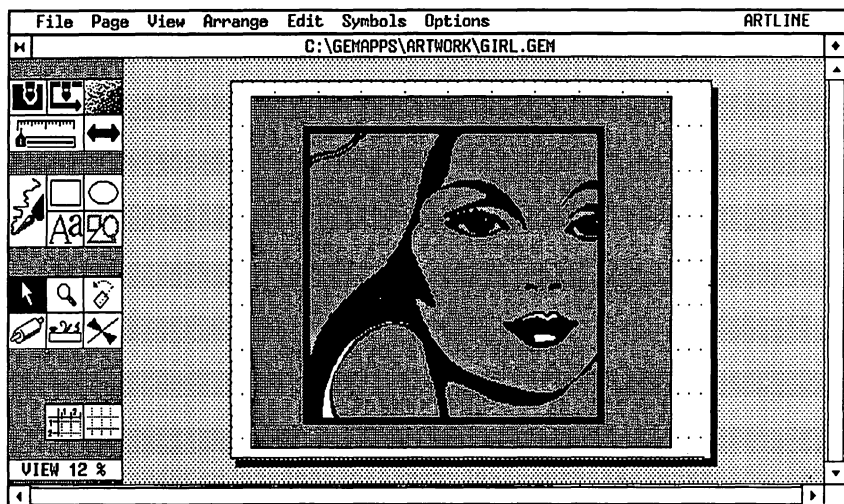


The ITEM SELECTOR lists the names of available files. You can open GEM Draw and GEM Artline files having the extension .GEM.

The *directory line* shows the disk and directory in which you are currently working—C:\GEMAPPS\ARTWORK in this case. The directory name is followed by the filename specification (*.GEM). The *directory window* lists the filenames that conform to the filename specification—those with the .GEM extension. The bar at the top of the directory window also shows the filename specification.

You use the *selection line* (which is now blank) to enter the name of the picture you want to open and place on the drawing surface.

Select the file GIRL.GEM from the list by typing its name. As you type, "GIRL.GEM" is written on the selection line—press the **Enter** key (this is the same as clicking on the OK button). The picture GIRL.GEM, which features a woman's face, appears on the drawing surface:



Using the ITEM SELECTOR is explained in greater detail in the *GEM Artline Reference Guide*.

In the following exercises you will learn how to change your view of this picture.

Viewing Pictures

GEM Artline provides many ways of changing the view of your picture. You can enlarge and reduce the magnification, or focus in on a specific part of the picture. This section explores some of the possibilities.

Scrolling

Sometimes your picture is too large to be displayed entirely on the screen. When this happens, you can use the scrolling tools to move various parts of the picture into view. There are two sets of scrolling tools on the GEM Artline screen. Those on the bottom control horizontal movement; those on the right side of the screen control vertical scrolling. The scrolling tools are:

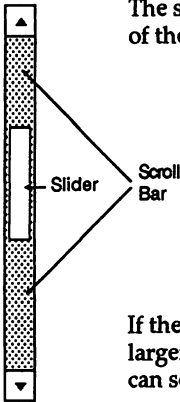
- the *scroll arrows*
- the *slider*
- the *scroll bar*

Scroll Arrows



You click on the scroll arrows to scroll through a picture in small increments. Each arrow points toward the portion of the picture that will come into view when scrolled. For example, when you click on the up arrow of the vertical scroll bar, the picture scrolls toward the top of the picture.

Slider and Scroll Bar



The slider allows you to scroll pictures quickly. You choose the amount of the picture to be scrolled by dragging the slider within the scroll bar.

You click in the scroll bars to move the slider in large increments.

The slider also tells you something about the size of the picture and the portion of it currently displayed. If the slider spans the full length of the scroll bar, the drawing surface is showing you the full picture—this shows you that you cannot scroll in that direction (horizontally or vertically). This happens, for example, when you display a picture with the Full View command.

If the slider does not span the full length of the scroll bar, the picture is larger than that currently shown in the drawing surface. In this case, you can scroll the picture.

You can tell how much of the drawing surface is visible in the work area by looking at the size of the sliders. When the sliders are small, you're viewing a small amount of drawing surface. Small sliders help show you the amount you are zoomed *in* on the work area. The larger the sliders, the more drawing surface is visible.

You can tell what part of the drawing surface is visible in the work area by looking at the position of the sliders. If the vertical slider is all the way to the top and the horizontal slider is all the way to the left, you're looking at the top left corner. If both sliders are in the middle of the scroll bars, you're viewing the middle of the drawing surface.

Compare what happens when you:

- Drag the horizontal slider left and right various distances.
- Click on the horizontal scroll bar to the left or right of the slider.
- Click on the right- and left-arrow.

You can find a more detailed explanation of the slider, the scroll bar and the scroll arrows in the *GEM/3 Desktop User's Guide*.

Magnifier



With the *Magnifier* you can “zoom in” on the drawing surface. Seven different zoom levels are available, ranging from 6% of the normal view to 400% magnification. The view box at the bottom of the Toolbox displays the current percentage of magnification.

Click on the Magnifier. It becomes highlighted, and the pointer shape changes to a magnifying glass.

In 100% view, the screen picture is dot-for-dot the same as the printed picture that would appear on a 300 dpi (dots per inch) laser printer. This lets you see exactly which details will be printed at 300 dpi. If your printer has a resolution of only 150 dpi, the 100% view shows details that won't be printed; you should use 50% when you want to confirm the details that will be printed on a 150 dpi printer.

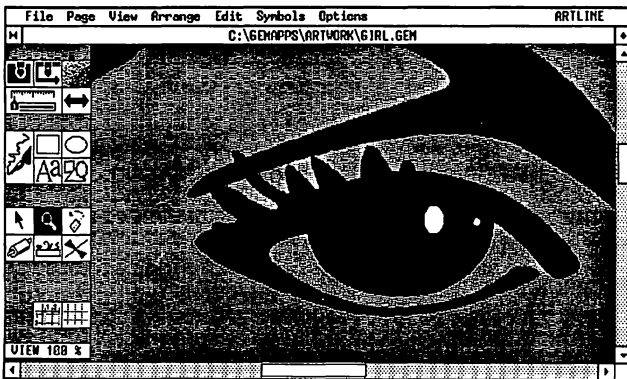
Note: The screen display may be vertically distorted. 100% represents 100% detail, not 100% scale size. Typically the picture appears larger on the display than its actual printed size.

Each time you click the Magnifier in the work area, you zoom out one level. If you try it now, you'll see the percentage in the view box change.

There are other ways to change your view of the drawing surface with the Magnifier:

- You can make the entire picture fill the screen by double-clicking anywhere inside the drawing surface. The full-picture display size varies, depending on the display type you're using and the paper size you select.
- You can enlarge a section of the picture and make details more visible by following these steps:
 1. Place the magnifying glass pointer over the area of the picture to be centered within the enlarged view—in this case, the woman's left eye. Drag the pointer toward the bottom of the work area by holding down the mouse button as you move the mouse toward you.

A "rubber rectangle" encloses the eye. As you drag downward, the rectangle grows larger; if you drag upward, the rectangle grows smaller. Notice that no matter which way you drag, the rectangle remains centered on its starting point, the right eye. The smaller the rectangle is when you release the mouse button, the larger the percentage of magnification.
 2. When the rectangle completely encloses the eye, release the mouse button. The screen is redrawn.



The drawing surface now displays only the magnified contents of the rectangle.

You can enlarge your view of any portion of a picture using this method. Try it once again:

1. Switch to full-picture view by double-clicking anywhere on the drawing surface.

Again, you see the entire picture on the drawing surface.

2. Place the magnifying glass on another area and drag it away from where you double-clicked. Release the mouse button.

The area you enclosed with the rectangle appears magnified on the screen.

View Menu

View	
Full View	F1
Normal View	F2
Reduced View	F3

Hide Image	F9
Fill Off	F10

The View Menu commands allow you to switch between the three most commonly used view sizes: full view (full picture shown on your screen), normal view (100%), and reduced view (6%).

Move the mouse to the View Menu and select **Reduced View**.

The screen display now switches to reduced view.

Function Keys

You can also select the full, normal, and reduced view levels using function keys F1 (full view), F2 (normal view), and F3 (reduced view).

To increase or reduce the view size incrementally, use the Plus (+) and Minus (-) keys in the numeric keypad.

Note: You can choose many of the menu commands through your keyboard. These *keyboard shortcuts* are displayed after the command in

the menu. The  symbol in the menu represents the Alt key:  D means that you hold down the Alt key as you press the D key.

Using Rulers

You can display rulers to help you judge the size of the current view.

There are several ways to display and hide the rulers. Choose the method you find easiest to use:

Options	
Preferences ...	

Show Rulers	F5
Show Grid	F6
Hide Tools	F7
Hide Symbols	F8

- Select the **Show Rulers** command from the Options Menu. GEM Artline shows the rulers along the top and left borders of the work area. When you select this command, GEM Artline changes it to **Hide Rulers**.
- Select **Hide Rulers** from the Options Menu. GEM Artline turns off the rulers.

- Toggle the display of the rulers on and off with the F5 function key.



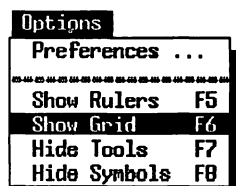
- Click on the Rulers icon at the bottom of the Toolbox—if the rulers are displayed, they are removed from the screen; if they are hidden, GEM Artline displays them.

Double-clicking on the Rulers icons cause the Page Layout dialog to be displayed. This dialog controls factors such as page size, borders, and page orientation—see your *GEM Artline Reference Guide* for complete details.

Using the Grid

You can project a *grid* onto the drawing surface to help you size and align objects precisely. The grid appears on the drawing surface as a pattern of dots, but these dots do not actually become part of your picture.

You can use any of the following methods to display or remove the grid:



- Select **Show Grid** from the Options Menu. The grid is projected onto the drawing surface. When **Show Grid** is enabled, GEM Artline replaces it with the **Hide Grid** command.
- Choose **Hide Grid** from the Options Menu. The grid disappears.

- Toggle the grid on and off by pressing the F6 function key.



- Click on the Grid icon at the bottom of the Toolbox—if the grid is off, GEM Artline displays it; if the grid is on, GEM Artline removes it from the drawing surface.

If you double-click on this icon, GEM Artline displays the Grid Size dialog. Through the Grid Size dialog, you tell GEM Artline the amount of space you want between the grid points. In the next tutorial, “Learning the Basics,” you’ll reset the distance between the grid points.

Saving Files

GEM Artline filenames have the extension .GEM. Like files created with other applications, GEM files can be printed, redirected to an output file, or transmitted over a network.

To save a file for the first time:

1. Choose **Save As** in the File Menu. GEM Artline displays the ITEM SELECTOR.
2. Move to the \GEMAPPS\ARTWORK\ directory and type the name of the file. in the Selection line. Refer to the *GEM Desktop User's Guide* for details about the ITEM SELECTOR and its uses.

The file is saved. To save the file subsequently, you need only use the **Save** command in the File Menu.

Exiting GEM Artline

To exit the program, choose **Quit** in the File Menu or use the keyboard shortcut, **^Q**.

You are returned to the location from which you started the program.

Summary

In this section, you learned how to start GEM Artline, open a picture, adjust your view of the drawing surface, save files, and exit GEM Artline. In addition, you learned how to display and hide the rulers and grid.

Learning the Basics

In this section, you will learn how to:

- draw squares, rectangles, circles, and ellipses
- draw elements from the center
- select picture elements
- delete elements
- change colors and gray levels

Drawing Basic Elements



GEM Artline has four drawing tools. These tools are in the second group of icons in the Toolbox.

The two tools that you'll use in this section—the Rectangle and the Ellipse—are *drawing primitives*, or ready-made shapes. You simply choose the tool, place the pointer on the drawing surface, then drag. The shape is drawn as you drag the mouse.

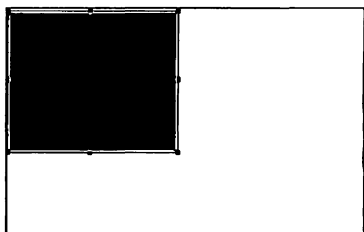
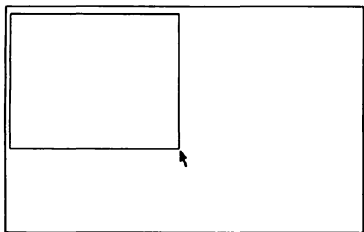
Before beginning to draw, select **New** in the File Menu to clear the drawing surface. Then press **F1** to select full view. The drawing surface is cleared, and the full drawing surface is visible in the work area.

Drawing Rectangles

In this exercise, you'll draw a rectangle.



1. Click on the Rectangle icon. It becomes highlighted.
2. Move the pointer to the upper left corner of the drawing surface. Press the mouse button and drag the mouse to the middle of the drawing surface. Release the mouse button. See the following illustration.



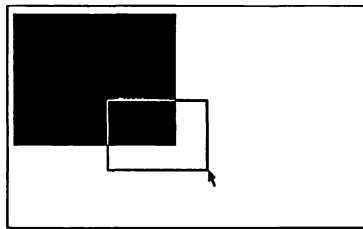
A black rectangle appears on the screen, enclosed in a *selection frame*.

A selection frame is an adjustable and moveable rectangle that identifies a selected element or element group. It consists of a border and eight squares called *sizing handles*.

When you select a picture element or text element, it is enclosed in a frame. The next action you take will affect only “framed” elements, unless of course, the action is unrelated to the element, such as drawing another element.

Newly-drawn picture elements, such as the rectangle you just drew, are selected until you draw another element. When you do, the frame around the previously-drawn element disappears.

3. Move the pointer to the middle of the rectangle. Press the mouse button and, holding the mouse button down, drag the mouse to a point below and to the right of the lower right-hand corner of the first rectangle.



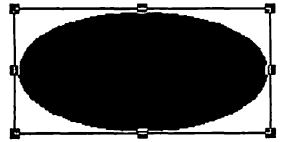
A second rectangle appears on the screen surrounded by a frame. The frame enclosing the first rectangle disappears.

Drawing Ellipses

Ellipses are just as easy to draw as rectangles. To draw an ellipse, follow the steps below. Before you begin, clear the drawing surface by choosing **New** in the File Menu.

1. Click on the Ellipse tool. The Ellipse tool is highlighted.
2. Place the Pointer in the center of the drawing surface. Press the mouse button and drag downward and to the right. Release the mouse button.

As you move the mouse, you can see a "phantom" outline of the ellipse that will be drawn. When you release the mouse button, the ellipse is drawn.



Drawing Circles and Squares

You can use the GEM Artline *snap* function to make drawing perfect circles and squares easier. In this case, the rectangle or ellipse to be drawn will be aligned with the nearest grid point:

1. Turn on the grid. (See the discussion of the grid in Section 2.) Choose the **Snap On** command in the Page Menu.

The grid is now visible and the menu command changes to **Snap Off**. The structure of the picture has not been changed at all. However, when you draw a new rectangle, its corners are automatically positioned along grid points and sized in grid-point size increments.

2. Choose the Rectangle tool and draw a rectangle. Note how the corners of the rectangle snap to grid points as you drag.

You can change the distance between grid points. The smaller the distance, the greater the precision that you can obtain. Keep in mind that a perfect square or circle must be as high as it is wide.

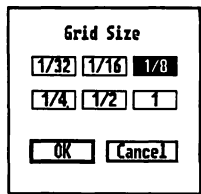
To change the distance between grid points:

1. Select the **Grid Size** command in the Page Menu.

The Grid Size dialog appears on the screen. The current grid size is highlighted.

2. Click on grid size 1/8 and then click on OK.

The dialog disappears and the screen is redrawn with the new grid size. A drawing precision of 1/8 inch is set.



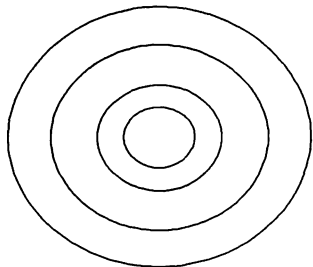
Note: The grid size determines the drawing precision only when the snap function is turned on, but the fact that the grid is visible does not necessarily mean that the snap is on. To be sure, look at the Page Menu. The command is always the *opposite* of the current state. Thus, the command is **Snap Off** when the snap is turned on.

To turn the snap off, choose the **Snap Off** command in the Page Menu.

Drawing Elements from the Center

Until now, you've drawn picture elements by dragging from one of the element's corners—such as the upper left or lower right corner. Sometimes you'll want to draw an element starting from the center. For example, a set of concentric ellipses is much easier to draw by starting at the center point. To do so, you press the Shift key as you drag.

In this exercise, you will draw a set of concentric circles like the one shown at the left.



1. Clear the drawing surface with the New command in the File Menu. Click on the Ellipse icon and move the pointer to the middle of the drawing surface.
2. Press the Shift key and drag to draw the largest circle first. Note that the point at which you start dragging remains the center of the circle.
3. Start each successive circle at the center of the last circle you drew.

Squares and rectangles can also be drawn from the center using the same method.

Selecting Elements

When GEM Artline is operating in selection mode (the Selector icon is highlighted), you can select any picture element by clicking on it. Clear the drawing surface, then draw two rectangles. The second rectangle you drew is selected.

1. Click on the Selector icon. It becomes highlighted.
2. Click with the mouse anywhere on the first rectangle that you drew.

The selection frame encloses that rectangle, indicating that it is now the selected rectangle.

De-Selecting Elements

To de-select a picture element, click in an empty part of the work area. For example, if you click in the upper right corner of the work area, the frame around the last selected rectangle disappears.

Selecting Multiple Elements

Sometimes you'll want to perform the same operation on multiple elements. For example, you might need to copy a picture that contains several elements without changing the arrangement of the elements.

There are two ways to select more than one element at a time:

- dragging a rubber rectangle around a group of elements
- *shift-clicking* on each additional element

Selecting by Dragging

When you want to select several elements that are close together, you can "net" them with the rubber rectangle.

Place the pointer near the first element and then drag the mouse as if to draw a graphic element. A rubber rectangle forms as you drag. When it completely encloses the elements you want to select, release the mouse button. GEM Artline highlights the elements you've selected.

For further details about selection techniques, refer to the *GEM/3 Desktop User's Guide*.

Selecting by Shift-Clicking

Shift-clicking is useful for selecting elements that are scattered about the drawing surface. Shift-clicking means to hold down the Shift key while you click on the elements you want to select.

Deleting Elements

Deleting an element removes it from the drawing surface. To delete an element, select it and then do one of two things:

- Choose the **Delete** command in the Edit Menu.
- Press the **◆D** key.

You can restore the last element you deleted by choosing **Undelete** in the Edit Menu.

Choosing Colors

Note: If your computer doesn't have a color monitor, you should skip to *Choosing Gray Levels* below.

Depending on your monitor, you can choose from eight to sixteen colors for your picture elements. The two brush tools shown in the top of the Toolbox each open a full color palette. The first tool changes the fill color; the second tool changes line or outline color. All picture elements, including text elements, have both a fill color and a line color.

In GEM Artline, elements are drawn in black, unless you select another color or gray level.

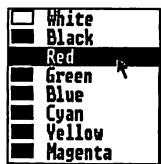
To change the color of a graphic element:

1. Click on the Selector icon in the toolbox and then select the element by clicking on it with the mouse.
2. Click on the Fill Color icon. A color palette appears on top of the Fill Color icon. As you move the pointer through the palette, GEM Artline highlights the color that would be selected if you clicked the mouse at that moment.

3. Click on "Red."

The Fill Color palette disappears and the selected rectangle is now red.

To change the outline color of a graphic element, you follow the same sequence of steps: select the element, click on the Line Color icon, and choose a color from the palette.



Setting Default Colors

You can set a *default* fill or line color for your graphic elements. "Default" means that all graphic elements you draw from that point on will have the selected fill or line color, until you either change the default or quit GEM Artline. To set the default:

1. De-select all elements.
2. To set the default *fill* color, click on the Fill Color tool and then select a color in the palette.
3. To set the default *line* color, click on the Line Color tool and then click on a color in the palette.

When a default color is selected, the icon itself takes on that color. The default color remains selected until you choose another default or exit the program.

Choosing Your Color Palette

If your monitor supports 16 colors, you can set the fill and line color palettes to use all of them:

1. Click on the Options Menu and choose the **Preferences** command. The Preferences dialog appears.
2. In the Colors field, click on the button labeled "16," then click on OK. Both the Fill and the Line icons now contain 16-color palettes.

Choosing Gray Levels

GEM Artline offers nine predefined and 91 user-definable *gray levels* you can use to fill picture elements. You can also use gray levels in combination with colors to create dimensional effects and with black and white to create gray tones.

Gray levels are expressed in percentages (%) and range from full density, at 100%, to hollow, or zero density, at 0%. Like the color brush tools, the gray level tool contains a palette of gray levels to choose from plus a field in which to define levels from 0% to 99%.

1. Select one of the rectangles on the drawing surface.
2. Move the pointer to the Gray Level tool and click. The gray level palette appears on top of the Toolbox.

Note that, like the fill colors and line colors, the gray levels are highlighted as you move the pointer up or down through the palette.

3. Click on the "48%" gray level.

The gray level palette disappears and the rectangle is filled with 48% gray shading.

In addition to the eight predefined gray levels in the gray level palette, there are two other options:

- | | |
|--------|---|
| hollow | All selected graphic objects become “transparent”—that is, only their outlines are visible. Items underneath the element are visible. |
| define | Allows you to modify a gray level at 1° gradations. Since most laser printers have only eight distinguishable gray levels, this option should be used only when sending pictures in a PostScript file to a photo typesetting machine. |

Setting Default Gray Levels

As with the color icons, you can set a default gray level simply by choosing one when no picture element is selected. “Default” means that all graphic elements you draw from that point on will have the selected gray level until you either change the default or exit the program. To set the default:

1. De-select all elements.
2. Click on the Gray Levels icon and then select a gray level in the palette.

Note that, unlike the brush tools, the gray level tool does not change to the default gray level.

Summary

Having worked through this section, you should be able to create rectangles and ellipses, select, de-select, and delete elements, and assign color and gray level attributes. In addition, you should be able to draw objects centered around a point, and be able to use the snap function. In the next section, you’ll learn how to manipulate picture elements.

Editing Pictures

In this section, you will learn how to:

- move picture elements around the drawing surface
- copy single picture elements
- change the size of a picture element

As is often the case in working with GEM Artline, you may wish to change the size or position of a picture element already drawn. You can do this when the Selector icon in the Toolbox is highlighted.

Moving Picture Elements

There are two ways to move picture elements on the drawing surface:

- with the mouse
- with the **Move** command

Moving Elements with the Mouse

Most often, you'll probably use the mouse to move objects about the drawing surface. This technique is the quickest:

1. Switch to full picture view by pressing the F1 key. Using the Ellipse tool, draw a circle near the middle of the screen. The screen now contains a circle, which is enclosed in a *selection frame*.
2. Click on the Selector icon.
3. Click anywhere on the circle and drag the circle toward the upper right corner of the screen.

A phantom of the selection frame moves with the mouse pointer, previewing the new location of the circle.

4. Release the mouse button.

The circle moves to the new position.

Moving Multiple Objects

In this exercise, you'll use the dragging method described above to move two picture elements at the same time without changing their positions relative to each other. First draw two circles on the drawing surface.

1. Select both circles either by the shift-clicking method or by dragging a rubber rectangle around them, as described in "Selecting Multiple Elements" in Section 3. When selected, each circle is enclosed in a frame.
2. Place the pointer on either of the frames, hold down the mouse button, and drag the frame to another part of the work area.

Note that the second element moves with the first element, and when the mouse button is released, both elements are moved.

Moving Elements by Specific Distances

You can specify distance values to move elements to a precise location:

1. Clear the drawing surface, draw a small circle and a square, and then select them both.
2. Choose Move in the Edit Menu. The Move Object(s) dialog appears on the screen.

In the "Move Left/Right" field, you select the horizontal direction and distance; in the "Move Up/Down" field, you select the vertical direction and distance.

Move Object(s)

Move

Left

Right

by 00.00 inch

Move

Up

Down

by 00.00 inch

of copies 00

OK

Cancel

3. Select **Move Right** and **Move Up** by clicking on the corresponding buttons if they are not already highlighted. Type **1 . 00** (inch) in both distance fields. The “# of copies” field should contain the value 0. Click on **OK**.

The dialog disappears and the screen is redrawn with the picture elements shifted by the values you entered.

Copying Elements

If you want to reproduce the same picture element several times, you don't need to redraw it each time; you can copy it. The circle you moved in the last section should still be on your screen. If not, draw a circle anywhere on the drawing surface. Then follow these steps to copy it:

1. Click on the **Selector** icon and select the circle by clicking on it.
2. Hold down the **Shift** key and drag the circle to the right by a few inches. Release the mouse button.

A copy of the element appears where you release the mouse button. Note that the original element remains where it was.

Another way to copy picture elements is to use the **Copy** command in the **Edit Menu**. When you choose **Copy**, all currently-selected picture elements are copied down and to the right by one grid point.

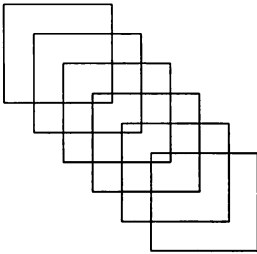
Copying and Moving Elements

To copy an element and move the copy a specific distance at the same time, use the **Move** command:

1. Clear the drawing surface and then draw a square.
2. Click on the **Gray Level** icon and select “hollow”.
3. Choose **Move** in the **Edit Menu**. The **Move Objects** dialog, shown previously, appears.

4. Choose Move Right and Move Down, and enter .25 (inch) in both of the distance fields of the dialog. Type 5 in the "# of copies" field, then click on OK.

The square is copied five times, each time the square is shifted the specified distance.



This method is useful for aligning a large number of elements precisely—for example, a row of rectangles for an organizational diagram. Tedious hand-copying and aligning becomes unnecessary.

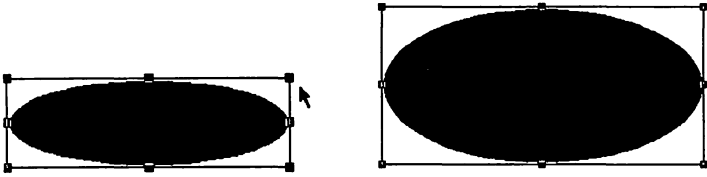
Note: If the combination of the number of copies and the Move values would create copies off the drawing surface, the copying process is automatically interrupted and the program displays a warning.

Resizing Elements

Note that the selection frame contains eight tiny squares, or *sizing handles*. Using these sizing handles, you can change the size and proportion of selected picture elements:

1. Clear the screen by selecting New in the File Menu. Draw an ellipse and then click on the Selector icon.

2. Drag the upper right sizing handle up and to the right. The size of the frame changes as you drag the mouse. When you release the mouse button, the ellipse is rescaled to fit the new frame.



You can resize a picture element in any direction. To change both the height *and* width of an element, drag one of the corner handles. To change the element's height *or* width (but not both), use the sizing handles in the middle of the border sides.

Resizing and Copying Elements

The **Scale** command allows you to resize elements with percentage-point precision. It also lets you resize and copy elements simultaneously.

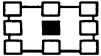
In this exercise, you will simultaneously copy and scale a circle to create this effect:

The ellipse you resized in the last section should still be on the drawing surface.

1. Choose **Scale** from the **Edit** Menu.

The **Scale Object(s)** dialog appears.

Scale Point

Fixed point: 

Horizontal scaling: 100 %

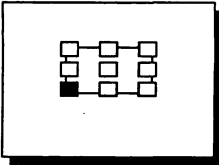
Vertical scaling: 100 %

of copies: 00

“Fixed point” shows a picture of a selection frame. You use this frame to choose a point in the element you’re resizing that should be “anchored.” Select either a sizing handle or the center of the frame to choose the anchored point by clicking on the appropriate box in the dialog.

In the “Horizontal scaling” and “Vertical scaling” fields, a value of 100% denotes no change, a value below 100% produces a reduction in size, and a value above 100% enlarges the picture element.

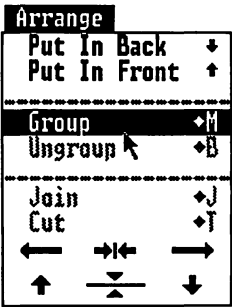
- 2. Click on the bottom left handle of the frame. This sets the bottom left corner of the *actual* selection frame as the anchored point. Type 95 in each of the scaling fields. Type 10 in the “# of copies” field. Click on OK or press **↵**.



The circle is copied ten times; the copies are staggered horizontally, creating a staircase effect. Each copy is scaled vertically and horizontally to 95% of the dimension of the preceding copy—that is, the one in front of it.

Arranging Elements

In the following exercises, you will learn how to combine picture elements into a group, how to move picture elements into the foreground or background, and how to align picture elements on the drawing surface.



Grouping Picture Elements

GEM Artline allows you to group a number of picture elements and then scale, move, or copy them as if they were a single element. You can also create groups that contain other groups, each of which may contain additional groups.

In this exercise, you'll combine single elements to form a group. If the drawing surface still contains picture elements, remove them with the **New** command. Then follow these steps:

1. Draw a circle and a square in the middle of the drawing surface (not overlapping). Click on the Selector icon then shift-click or drag a rectangle to select both elements. Both elements are now marked with frames.
2. Select the **Group** command from the Arrange Menu. A single frame now appears around both elements, showing that they are grouped. The group can now be treated as a single picture element. Moving, scaling, and copying always affect all picture elements in a group.

You can now add new picture elements to the group:

1. Draw a circle next to the grouped elements. The circle is now marked by a frame.
2. Switch to selection mode. Holding down the Shift key, click on the grouped elements. There are now two selected items on the drawing surface: the circle and the group.
3. Choose **Group** in the Arrange Menu again.

The circle now becomes part of the group. A single frame surrounds all three elements.

Breaking Groups

You can edit grouped picture elements only as a group. This is true not only for moving or scaling, but also for assigning colors and gray levels.

To change one element in a group without changing the other elements, you have to break the group.

If the group from the last example is no longer selected, click on it with the mouse to select it again. Choose **Ungroup** from the Arrange Menu to break the group into its elements.

Note that the circle and the group are both selected. To change the color, size, or position of the circle without affecting the grouped elements, you must de-select the circle and group and then select the circle. To de-select both items, click in an empty area of the drawing surface.

Leave the remaining group on the drawing surface. You'll use it for the following exercise.

Working in the Foreground and Background

Picture elements exist on the drawing surface in *layers*, so that the most recently drawn element is "on top" of any other picture elements. This layering is most apparent when elements overlap.

To see element layers, move the circle partially over the group. Note that the circle actually covers the part of the group it overlaps.

To change the layering of these picture elements, you have two choices. You can move the circle into the background, or you can bring the group into the foreground.

To move the circle to the background:

1. Select the circle (if it's not already selected).
2. Choose the **Put in Back** command from the Arrange Menu.

GEM Artline places the circle in the background.

To bring the circle back to the foreground, choose **Put in Front** from the Arrange Menu.

Keyboard Shortcuts

You can also choose the **Put in Front** and **Put in Back** commands using the keyboard. The down-arrow key moves the selected picture elements “down” into the background; the up-arrow key brings the selected elements *up* to the foreground.

Aligning Elements

The alignment symbols in the Arrange Menu let you align picture elements.

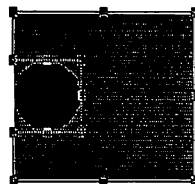
1. Clear the drawing surface with the **New** command. Draw a large square and assign it a color or (on a monochrome screen) a gray level.
2. Draw a small circle in the middle of the square and assign a different color or gray level to it.
3. Select both picture elements by dragging a selection rectangle around them.
4. Select the “Left Align” symbol (left arrow) in the Arrange Menu.

The small circle aligns itself along the left edge of the square, as shown in the illustration to the right.

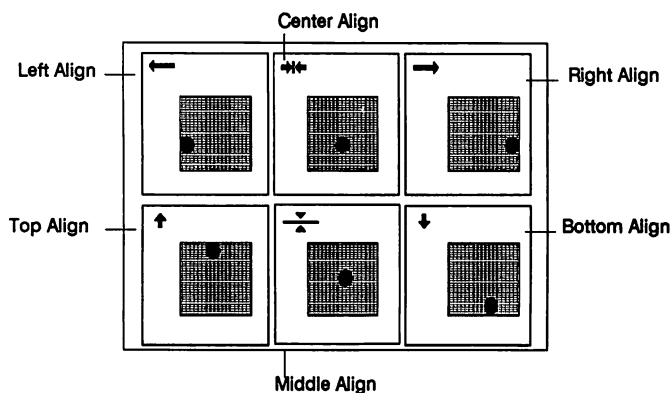


All selected picture elements are aligned with the *selected* picture element that is furthest left, right, up, or down. You can center elements vertically with the "Center Align" symbol and horizontally with the "Middle Align" symbol.

Experiment a bit with the alignment symbols by adding circles, selecting different groups, and observing the effects of the various alignment symbols, illustrated below:



Left Alignment



Summary

In this section, you learned how to manipulate picture elements. You should now be able to move picture elements with the mouse or with the Move command, copy elements, resize them, group elements and break the groups, move elements into the foreground or background, and align elements relative to each other.

Using Symbols

GEM Artline allows you to create and store *symbols*, ready-made art you can add to your pictures. Logos are typical symbols, but you can save any picture or picture element as a symbol.

When you create a symbol, you can store it in a *symbol library*—a file that contains a collection of symbols. Art that is stored in symbol libraries is available any time you want it.

In this section, you'll learn how to use the symbols supplied with GEM Artline and how to create your own symbols and symbol libraries.

Symbol Libraries

One of the symbol libraries provided with the GEM Artline package is `EXAMPLES.SYF`. (All symbol library files have the extension `.SYF`.) You will use `EXAMPLES.SYF` to complete the exercises in this section. The installation program placed these files in the `SYMBOLS` folder. (Its full path is `\GEMAPPS\ARTWORK\SYMBOLS`.)

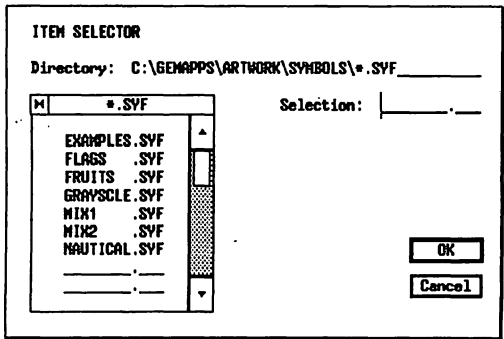
Each symbol library can contain a maximum of 64 symbols. The maximum size allowed per symbol is 16K bytes, and the symbol library itself cannot exceed 64K bytes.

Loading a Symbol Library

Before you can add symbols to a drawing, you must load a symbol library:

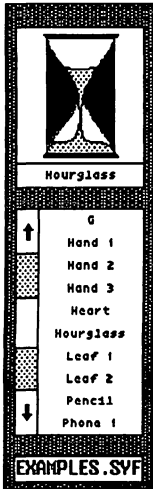
1. Choose Load Symbols from the Symbols Menu.

The ITEM SELECTOR appears; it lists the available symbol files:



2. Double-click on the name EXAMPLES.SYF. The symbol file is now loaded, and the Symbol Selector appears on the right side of the work area.

Using the Symbol Selector



Symbol Selector

The Symbol Selector contains a “viewer” that displays the current symbol and its name, plus a list of the symbols in the current library and the name of the current library. All actions in symbol mode—drawing, deleting, and renaming symbols—refer to the currently-displayed symbol.

You can change the current symbol by clicking on one of the names in the symbol list. If the library file contains more symbols than can be shown at once, you can scroll the symbol list until the name you want comes into view. Clicking on the up-arrow or down-arrow shifts the symbol list one line up or down.

The **Hide Symbols** command in the Options Menu allows you to remove the Symbol Selector from the screen while staying in symbol mode. Although the Symbol Selector is no longer visible, you can still draw the current symbol.

To re-display the Symbol Selector, display the Options Menu. Note that the command has changed to **Show Symbols**. When you click on the **Show Symbols** command, GEM Artline again displays the Symbol Selector on the screen.

Importing Symbols

In this part of the tutorial, you'll *import* two symbols onto the drawing surface. Before you begin, make sure the Symbol Selector is displayed and that EXAMPLES.SYF is the current library file.



1. Switch to symbol mode by clicking on the Symbols tool.
2. Click on "Hourglass" in the Symbol Selector. The hourglass symbol appears in the Symbol Selector viewer.

Although the symbol you see in the Symbol Selector viewer may appear distorted, Artline draws the symbol accurately on the drawing surface.

3. Place the pointer in the upper left corner of the drawing surface and drag down and to the right.

Note that a vertical rectangle is drawn, regardless of the direction you move the pointer. That's because this symbol always retains its *aspect ratio*, the height-to-width ratio it had when it was first saved as a symbol.

4. Release the mouse button.

The hourglass is drawn in the rectangle.

5. Click on "Heart" in the Symbol Selector and draw a rectangle for it on the drawing surface.

The "Heart" symbol appears in the rectangle. Note that GEM Artline fits the heart to the rectangle, regardless of the rectangle's height-to-width ratio. This is because the creator of the "Heart" did not specify that its aspect ratio must be maintained.

When you save a symbol, you decide whether it should maintain its aspect ratio. "Hourglass" maintains its aspect ratio; the "Heart" does not. GEM Artline will not let you draw a rectangle whose height-to-width ratio differs from that of the symbol. See the *GEM Artline Reference Guide* for a complete description of aspect ratio.

When a symbol appears on the drawing surface, it is always treated as a group, as indicated by the fact that it is enclosed within a single frame. You can continue to treat the symbol as a group (moving, sizing, or copying it, for example), or you can select the **Ungroup** command to break it into its original elements.

Creating Your Own Symbols

Creating your own symbols is easy. As long as you don't exceed the 16K per symbol size limit, you can make any picture element or element group into a symbol. You can even incorporate existing symbols into your new symbol. In this section, you'll create the symbol shown at the right.



1. Clear the screen with the **New** command. Draw a small square and assign it a white fill color.
2. Select the small square, then click on the **Rotator** tool. Position the thumbtack in the center of the square.
3. Choose the **Rotate** command in the **Edit** Menu. Specify 20° rotation angle and 20 copies, then click on **OK**.

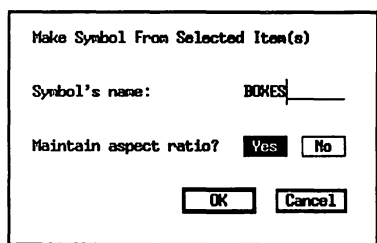
The box is copied and rotated in a spiral.

4. Draw a black circle that fits over the boxes. Choose the **Put In Back** command in the **Arrange** Menu.
5. Switch to selection mode and select all picture elements. All picture elements should now be marked by frames.

6. Select the **Make Symbol** command from the Symbols Menu.

The Make Symbol dialog appears on the screen.

7. In the "Symbol's name" field, type **BOXES**.



Note: Symbol names can contain up to 12 characters. These can include all available characters and all international special characters. Numbers, punctuation, and international characters are sorted by their ASCII-values rather than alphabetically.

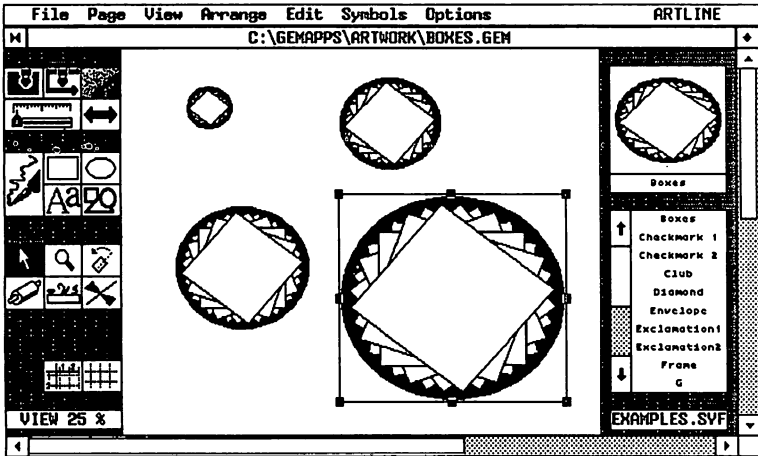
8. Ensure that the Yes button for "Maintain aspect ratio" is highlighted.

Clicking on Yes ensures that the symbol rectangle will always be drawn with the height-to-width ratio of the original picture elements. Once the symbol is drawn, however, you can stretch, skew, or otherwise distort it freely.

If you click on No, you can draw a rectangle of any proportions, and GEM Artline will fit the symbol to the rectangle.

9. Click on OK. The dialog disappears, the boxes appear in the Symbol Selector as the active symbol, and the symbol name BOXES is inserted alphabetically in the symbol list.

You can now draw the symbol in any shape or size:

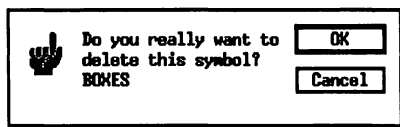


Deleting Symbols

If you no longer need a symbol, you can delete it from its symbol library. To delete the symbol BOXES:

1. Click on BOXES in the Symbol Selector list. The symbol is displayed in the Symbol Selector.

2. Display the Symbols Menu and choose **Delete Symbol** . In response, GEM Artline displays:

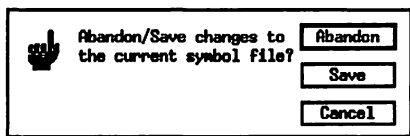


3. Confirm the deletion by clicking on the OK button. The symbol is deleted from the symbol library.

Saving Symbol Libraries

You need to save a symbol library only when you have altered the library in some way—by changing or deleting an existing symbol or by creating a new symbol. If you don't save a changed symbol library, all changes to the library will be lost when you quit GEM Artline; the next time you load the symbol library it will appear in its original form.

The **Save Symbols** and **Save Symbols As** commands in the Symbols Menu are for storing changed symbol libraries. If you've changed an existing library, use the **Save Symbols** command. When creating a new library or changing a library's name, use the **Save Symbols As** command. If you do anything that might result in the loss of changes to the current symbol library (like trying to load a new symbol library without saving changes to the current one), GEM Artline displays this warning:



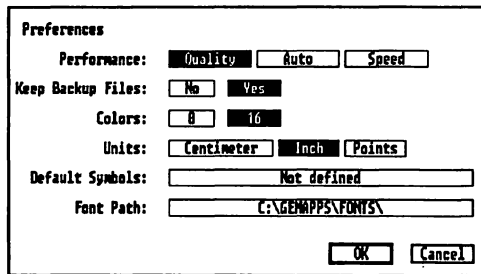
Here is what the exit buttons do:

- | | |
|----------------|--|
| Abandon | Abandons all unsaved changes to the current symbol library and continues with the requested action. |
| Save | Saves the current symbol library and continues with the requested action. |
| Cancel | Cancels the requested action; unsaved changes to the current symbol library are neither saved nor abandoned. |

Default Symbol Libraries

If you use one symbol library frequently, you can designate it as the *default* symbol library. The default symbol library is automatically loaded when you start GEM Artline. To designate a symbol library file as the default:

1. Choose the **Preferences** command in the Options Menu. GEM Artline displays the Preferences dialog:



If you haven't chosen the default symbol library, the Default Symbols button reads "Not defined." If you have already chosen a default symbol library, its full pathname appears in this button.

2. Click on the **Default Symbols** button. The **ITEM SELECTOR** appears.

If necessary, change the path in the **ITEM SELECTOR** until the folder containing the symbol library you want is named in the **Directory** line.

3. Double-click on the symbol library filename. The full path and filename of the symbol library file now appear in the **Default Symbols** button.
4. Exit the **Preferences** dialog by clicking on the **OK** button or pressing the **Enter** key.
5. Display the **Page Menu** and choose the **Save Preferences** command.

The next time you start **Artline**, your default symbol file will be loaded automatically. If you want to see the symbols displayed, click on **Show Symbols** in the **Options Menu**.

The **Save Preferences** command is a powerful one. See the description of the **Preferences** command and the **Save Preferences** command in the *GEM Artline Reference Guide*.

If you do not want a default symbol library, you can return the **Default Symbols** button to the "Not defined" state, follow these steps:

1. Choose the **Preferences** command in the **Options Menu**.
2. In the **Preferences** dialog, click on the **Default Symbols** button. The **ITEM SELECTOR** appears.
3. Click on the **ITEM SELECTOR's** **Cancel** button.
4. Display the **Page Menu** and choose the **Save Preferences** command.

Summary

In this section, you learned how to load and store, select, draw, create, and delete symbols and choose default symbol files. Next, you'll learn about a powerful drawing tool, the **Quill**.

Drawing Lines and Curves

This section describes how to use one of the most powerful drawing tools in GEM Artline, the Quill.



The Quill allows you to draw elements ranging from basic lines and simple shapes to complex filled forms and curves. Using the Quill may seem a little strange at first, but learning to use it is actually quite easy. After a bit of experimentation and practice, you'll be using the Quill with as much ease as the rectangle and ellipse functions.

Drawing Straight Lines

To draw a simple line connecting two points:

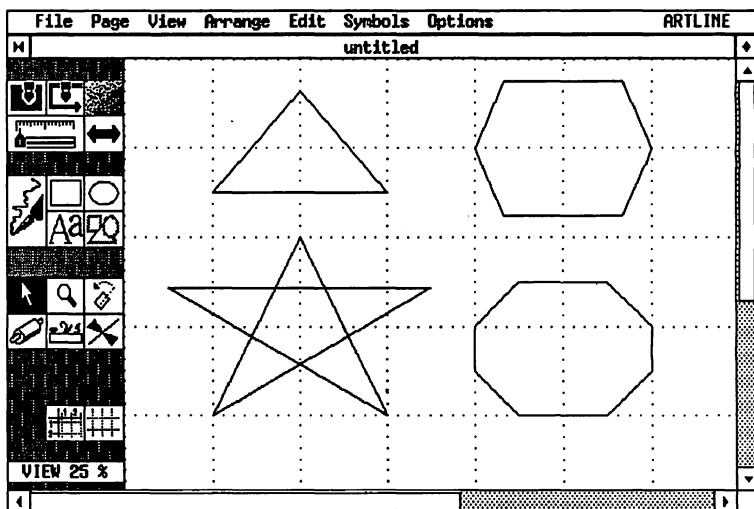
1. Turn the Quill function on by clicking on the Quill tool. GEM Artline highlights the Quill tool and changes the pointer to a cross hair (a cross in a circle).
2. Click in the upper left corner of the drawing surface.
A small square appears where you clicked. Note that the pointer has changed to a cross without the circle around it. It will remain this way until you complete the line.
3. Click in the lower right corner of the drawing surface. A second square appears, and a line connects the two squares.
4. Double-click anywhere in the work area.

Double-clicking completes the line. A couple of things happen:

- GEM Artline surrounds the line with a rectangular frame.
- The pointer changes back to a cross hair, indicating that you can draw another form with the Quill.

Drawing Simple Figures with Lines

The illustration below shows four simple geometrical figures made up entirely of straight lines. See if you can reproduce them on your screen.



First choose the New command (File Menu) to clear the drawing surface. Then switch to 25% view. Display the Page Menu and choose the Snap On command to turn on the grid snap. Display the Page Menu again, choose Grid Size, and set the grid size to 1/8 inch. If the grid is not visible, display the Options Menu and choose the Show Grid command.

To draw a figure, click at each vertex (corner) and double-click when you have completed the figure. If you make a mistake, press the Backspace key to delete the point you just set.

Drawing Curves

When you draw a straight line or any figure made up of lines, you simply mark the end points that GEM Artline will connect. When you draw a curve, you mark the beginning and end points of the curve, and you also control its direction and degree of curvature.

Types of Curves

In GEM Artline, you can draw three kinds of curves:

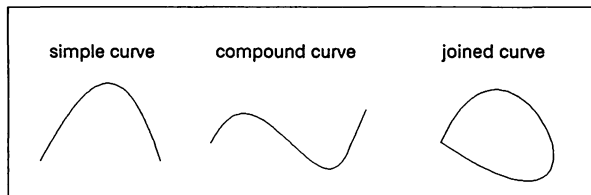
simple curve A curve that flows in one direction, like the letter "U." If you drew a line connecting the beginning and end points of a simple curve, it would not intersect the curve itself.

compound curve

A curve that flows in two directions, like the letter "S." If you drew a line connecting the beginning and end points of a compound curve, it would intersect the curve.

joined curve A curve whose beginning and end points are the same, resulting in a shape like a teardrop or flower petal.

The illustration below shows the three kinds of curves.



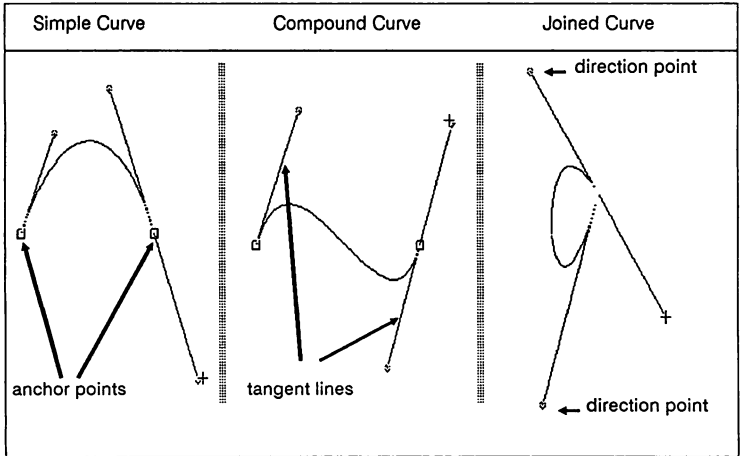
Curve Elements

Each curve type contains the following components, which you use as drawing aids:

- anchor points Small squares that mark the beginning and end of the curve. (Thus, every curve has two anchor points.) They are called anchor points because they are the fixed points from which the curve extends; they “anchor” the curve to the drawing surface.
- tangent lines Lines marking the boundaries of the curve. A *tangent* is the single point at which a curve touches a straight line. Each curve has two tangent lines, one connected to each anchor point. The lengths of the tangent lines, their angles relative to each other, and the direction in which you draw them determine the kind of curve you’re drawing and its degree of curvature.

If the idea of a tangent is not a familiar one, you can demonstrate it to yourself. Take something flexible—like a plastic ruler—and bend it to form a curve. Lightly touch the ruler to the top of your desk. The flat surface of the desk is tangent to the curve of the ruler at the point where they touch. If you tip the ruler to one side and touch it to the desk again, the desktop is tangent to the ruler at a different point on the curve.
- direction points Small circles at the ends of the tangent lines. These help you determine the direction of the curve.

This illustration shows the same three curves with their anchor points, tangent lines, and direction points.

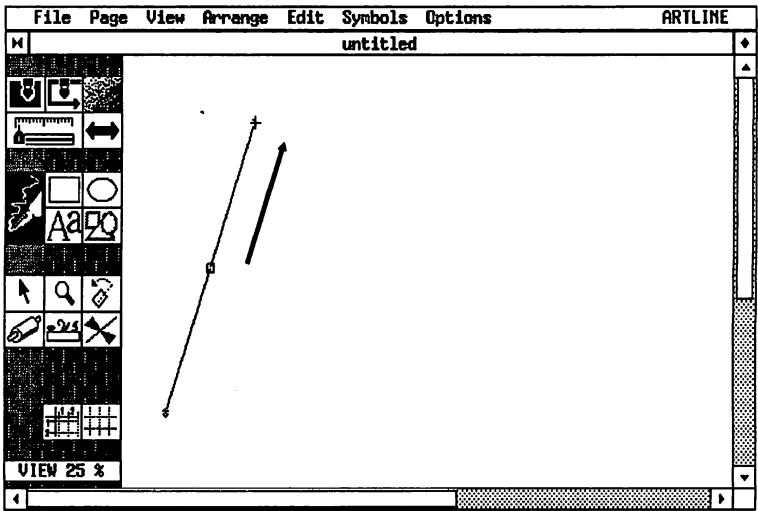


The steps for drawing any of these curves are essentially the same. This exercise describes how you draw the simple curve shown in the illustration above. Before you begin the exercise, do this:

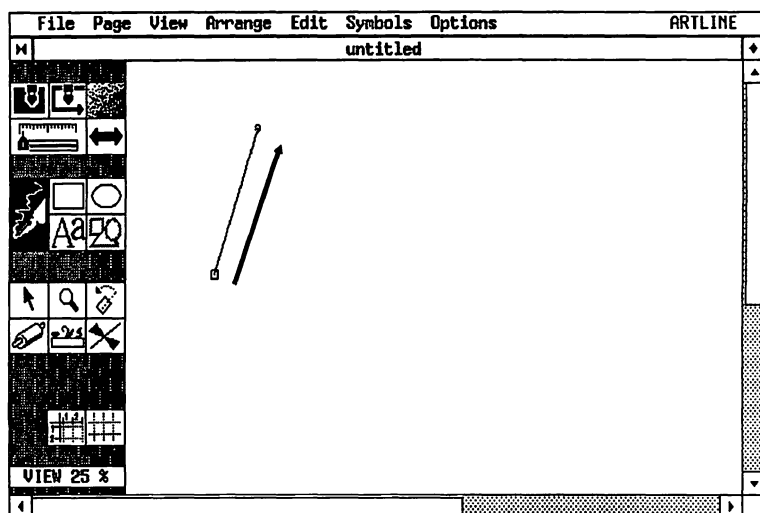
- Choose the **New** command (File Menu) to clear the drawing surface.
- Press the **+** or **-** key on your numeric keypad until the View Box at the bottom of the Toolbox reads "VIEW 25%."
- Switch to selection mode and click on the gray scale icon. Click on the first option in the gray scale menu, "hollow." You're doing this so that when you finish the curve, you'll see only a curved line, not a filled curve.)
- Turn the snap on. Use the **Snap On** command in the Page Menu.

Now click on the Quill tool and start drawing:

1. Move the cross hair to a point about an inch in from the Toolbox and about halfway between the top and bottom of the work area. Press and hold down the mouse button. GEM Artline marks this point as the first anchor point, the beginning of your curve. Don't let up the mouse button yet.
2. Drag almost to the top of the work area and a little to the right. As you drag, the first tangent line connects the cross's position to the anchor point, with a "tail" extending below the anchor point.



3. Release the mouse button. The first tangent line is now fixed to the drawing surface. (Note that the tail has disappeared. You won't be needing it.)

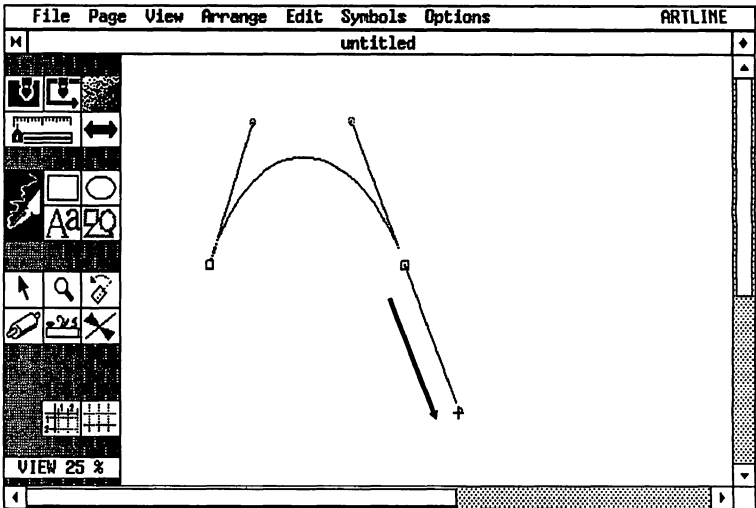


4. Move the cross about two or three inches to the right of the first anchor point. Press and hold down the mouse button. GEM Artline sets a new anchor point at this location.

5. Drag down (almost to the bottom of the work area) and a little to the right. Don't let up the mouse button yet.

As soon as you start dragging, two things happen:

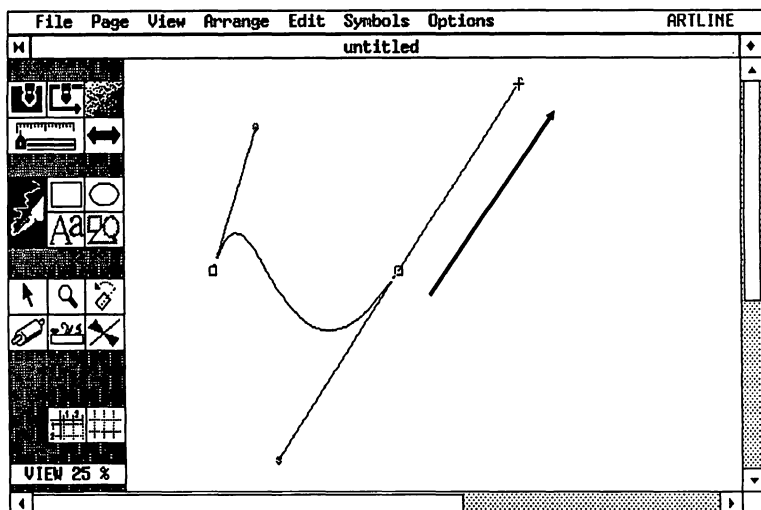
- A new tangent line appears, connecting the cross to the anchor point.
- The curve itself appears, drawn between the two anchor points. Note how the curve is tangent to the two tangent lines at the anchor points.



Your finger may be getting tired, but don't release the mouse button yet. There's one more thing to see.

6. You created the simple curve by dragging the two tangent lines in opposite directions from the two anchor points. You dragged the first tangent line *up*; you dragged the second tangent line *down*.

Now swing the direction point under the cross around so that it is above the anchor point. Note that the curve has changed from a simple curve to a compound curve, shown below.



7. Swing the direction point back down below the anchor point. When you have a simple curve that you like, release the mouse button.
8. Double-click anywhere in the work area. GEM Artline completes the curve, places a frame around it, and changes the cross back to a cross hair, which indicates that you can draw another curve.

Now you know three rules about drawing curves:

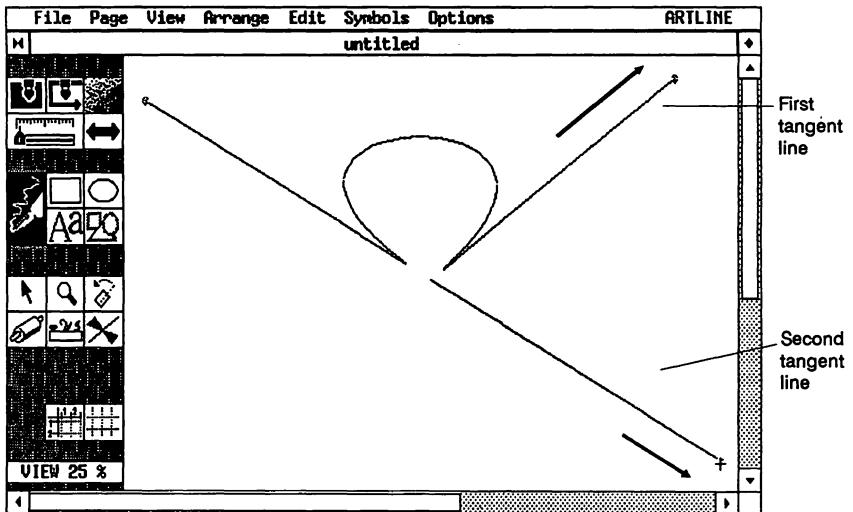
- To draw a simple curve, drag in opposite directions from the anchor points.
- To draw a compound curve, drag in the same direction from the anchor points.
- To complete a curve, double-click anywhere in the work area.

Before continuing, try drawing a number of simple and compound curves. Each time you complete a curve, you can choose the **Delete** command from the **Edit Menu** to clear the curve from the work area and make room for the next curve.

Drawing Joined Curves

The only thing that sets a joined curve apart from a simple or compound curve is the fact that its two anchor points occupy the same position on the drawing surface. To draw a joined curve:

1. Set the first anchor point and draw the first tangent line just as you did in the previous exercise.
2. Place the pointer *on top* of the first anchor point. Press and hold down the mouse button, and drag the second tangent line. Swing the second direction point around the anchor points and watch how the shape and size of the curve change.



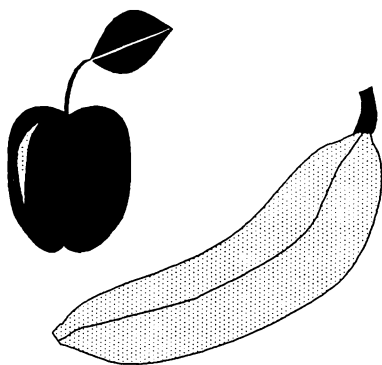
3. When you have a curve you like, double-click to complete it.

Connecting Curves

Each of the curves—simple, compound, and joined—you drew in the previous exercise is only a single curve. If you had drawn them with one of the fill options selected, they would have looked like this:



With the Quill, however, you can do more than just draw single curves. You can also draw a series of connected curves to produce complex shapes like this:



The figures in this illustration are made up of basic curve types. The following exercises show you step-by-step how to create them.

Drawing the Leaf

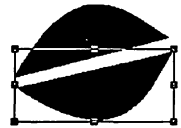
To draw the apple leaf, you simply draw a simple curve. This forms the first half of the leaf. then flip and copy it to form the second half.

1. Start the curve by placing an anchor point and drawing a tangent line. Place the crosshair on the drawing surface and drag upward and toward the left. Release the mouse button but do not double-click. GEM Artline draws the first anchor point and tangent line.
2. Complete the first curve by placing a second anchor point and tangent line. Place the pointer to the right of the first anchor point and drag downward. The curve forms as you drag.
3. Double-click. You've completed half of the leaf. To form the other half of the leaf, you'll duplicate the first half and flip it.



Drawing the second tangent line

4. Click on the Flip icon. Hold down the shift key and drag the mouse along the flat edge of the leaf. As you drag, the flip line forms. When you release the mouse button, the second half of the leaf is drawn opposite the first half.
5. Click on the Selector icon. Select the new leaf half and move it as close to the other half as you can. Select both halves of the leaf and group them with the **Make Group** command. Make a practice of grouping finished elements to avoid accidentally displacing elements.



Draw the second half of the leaf by flipping and copying the first half.

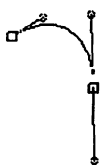
Drawing the leaf stem entails changing the direction of the curve, which is explained in "Changing Directions between Curve Segments" later in this section.

Drawing the Apple

The apple is created the same way as the leaf. You draw the first half, then copy and flip it to create the second half. This method is faster and easier than drawing both halves, and it ensures the uniformity of the shapes. The Quill icon should be selected.

To draw the first half:

1. Draw the curves as shown below. All of the curves in the apple are simple curves. Double-click when you complete the first half of the apple.



Draw the first curve.

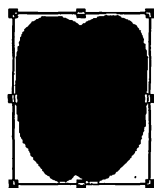


Draw the second curve.



Double-click when you complete the third curve.

2. Copy the first apple half in the same way as you did when drawing the leaf. Click on the Flip icon, then holding the Shift key, draw a vertical flip line along the straight edge of the apple. Release the mouse button when the angle display in the view box indicates 90° or 270°. The first apple half is copied.
3. Click on the Selector icon and move the two halves together to form the apple shape. Select the two elements and group them. The fruit section of the apple is finished.



The grouped apple

The section "Changing Directions between Curve Segments" explains how to draw the apple stem.

Undoing the Last Curve Point

There may be times when you decide that you don't quite like the way that last curve looks.

To delete an anchor point you've just set, press the Backspace key. Pressing the Backspace key "backs you up" to the previous step in drawing the figure, and you can draw the last curve over again.

By repeatedly pressing the Backspace key, you can delete previous anchor points all the way back to the first one in the figure.

You cannot delete the first anchor point of a curved figure with the Backspace key. To delete the first anchor point, double-click. (In effect, you're completing a single-point curve, which is no curve at all. You can then start over from the beginning.)

Once you've completed a curve, you can delete it with the Delete command in the Edit Menu or the keyboard shortcut Alt-D.

Changing Directions between Curve Segments

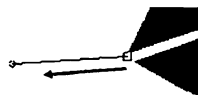
You won't always want smooth connections between curves. In this section, you'll draw two figures that contain sharp angles—the apple stem and the banana contained in the illustration on page 6-12.

Drawing the Apple Stem

To draw the apple stem:

1. Click on the Quill icon and draw the first tangent line, as shown to the right.
2. Click about one inch below the first tangent line to form a second anchor point. Drag the mouse downward to shape the first curve.
3. Click about 1 cm. to the right of the second anchor point. Place the cross directly on the third anchor point. Press and hold down the Alt key while you drag the cross upward. As you drag, a new direction point is formed. Drag the new direction point leftward until it is pointing in the same direction as that of the second tangent line. The next curve you draw will be almost parallel to the first curve.

By pressing down the Alt key, you made sure that there was only one anchor point at that spot. Had you not held down the Alt key, there would have been two anchor points in the same place.



Draw the first tangent line.



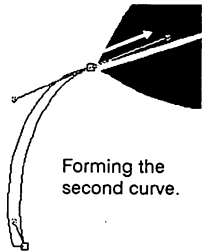
Draw the second tangent line.



Drag a new direction point from the third anchor point.

Direction changes are always drawn in this way. When the Alt key and the mouse button are pressed together, instead of drawing a new piece along the same curve, the last tangent line is "bent," causing a direction change.

4. Click on the first tangent point and drag the fourth tangent line to form the second curve as shown to the right.
5. Double-click to complete the figure.
6. To assemble the apple, click on the Selector icon. Select the stem and place it above the apple. Now position the leaf on the stem. When the pieces are in place, select all items and group them.



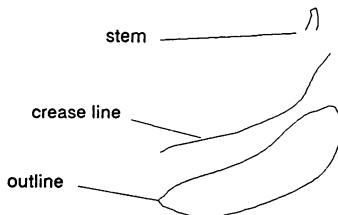
7. Now save the apple as a symbol. You will use this symbol later. Save it in an existing symbol library file or create a new file.



The assembled apple

Drawing the Banana

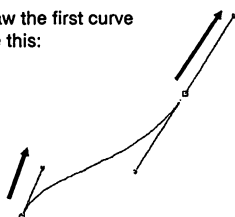
The banana in the illustration on page 6-12 is made up of three elements: the outline, the crease line, and the stem.



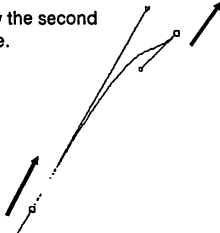
Start by drawing the outline:

1. Draw the first, second, and third curves of the outline, following the illustrations below. The arrows show the directions in which to drag the tangent line.

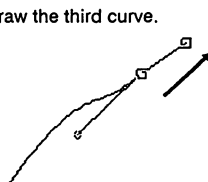
Draw the first curve like this:



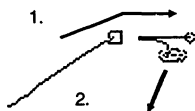
Draw the second curve.



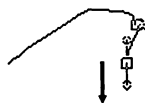
Draw the third curve.



2. Now you'll change the direction of the curve to form the tip of the banana. This step is shown below to the left. Place the cross on the fourth anchor point and, holding down the Alt key, drag in the direction shown by the bent arrow (1.). This step "bends" the tangent line. Release the mouse button. Place the pointer on the spot for the second point of the banana tip and, again pressing the Alt key, drag downward, as shown by arrow 2.
3. Draw the fifth curve as shown below to the right.



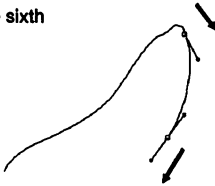
Bend the tangent line before drawing the fourth curve.



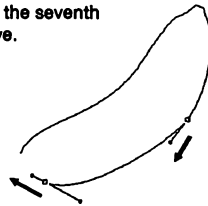
Draw the fifth curve.

4. Draw the next three curves using the illustrations below to guide you:

Draw the sixth curve,



and the seventh curve.



5. To finish the outline, click on the first anchor point that you drew.
The last element in the outline is a straight line.
6. Set the gray scale level of this element to 12%.

Draw the eighth curve.



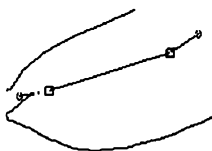
Click on the first anchor point, then double-click to complete the banana.



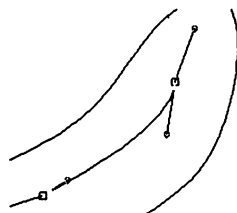
You're now ready to draw the crease line in the banana skin. This line consists of the curves shown below. Draw the crease by copying the illustrations. When you finish, set the fill of this element to hollow, then group the crease and the outline before starting the stem.



Draw the first curve from the bottom left tip of the banana.



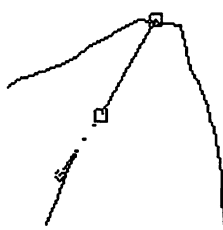
Drawing the second curve



Drawing the third curve



Drawing the fourth curve



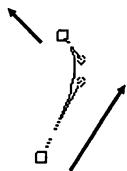
Drawing the last curve

When finished, set the gray scale level of the crease line to hollow. Group this element with the outline element. Now you're ready to draw the stem.

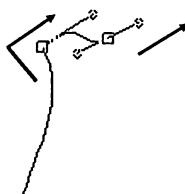
Drawing the Banana Stem

You draw the banana stem in three steps:

1. Draw the first curve, starting at the bottom.
2. Bend the tangent line and reposition the direction point. Draw a compound curve as shown below to the right.



Draw the first curve.



Change the direction of the curve, then draw the second curve.

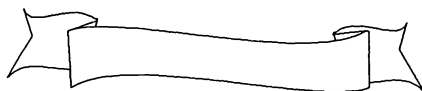
3. Change the direction point again and draw the third curve. Double-click to complete the stem.
4. Set the gray level of this element to 59% and then group it with the outline and crease elements.



Change the direction again, then draw the third curve.

Combining Curves and Straight Lines

As the following figure shows, you can create complex figures that are made up of combinations of curves and straight lines.



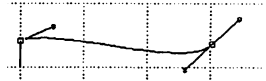
You can experiment with combining overlapping curves, but combining straight lines and curves requires one special step. In this section, you'll draw the basic outline of the banner shown above. In the following section, you'll use some curve editing functions to finish the banner.

Before you begin drawing, turn on the grid and select the 1/16th inch grid size. You'll start by drawing the middle drape section.

1. Using the Quill, draw the straight line that forms the left side of the middle drape. Start from the bottom of the line.
2. Place the crosshair directly over the second anchor point of the line. Press and hold down the Alt key and then press and drag the pointer. As you drag, a tangent line is formed. This is the first tangent line of the top curve of the middle drape. Release the mouse button.

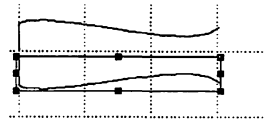
3. Double-click when you complete the curved top of the middle drape. Press the F10 key to turn off the fill function.

To draw the bottom half of the drape, you'll flip and copy the first half, as you did to draw the apple and the leaf earlier, with one extra step.



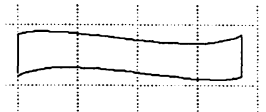
Drawing the top half of the drape

4. The first element you drew should be selected. If not, click on the Selector icon and select it. Click on the Flip icon and, pressing the Shift key, draw a horizontal flip line below the element. Release the mouse button when the angle in the view box indicates 360°.



Flipping and copying the first half of the drape

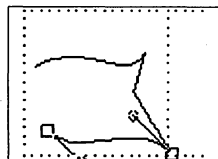
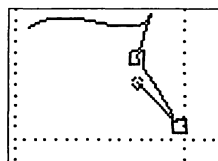
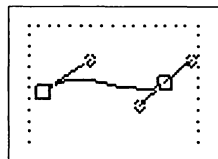
5. Next, flip the bottom half of the drape horizontally so that it can be fit with the top half. Draw a 90° (or 270°) vertical flip line along the right side of the element. This time do not press the Shift key. The element is flipped into the proper position.
6. Click on the Selector icon and move the bottom half of the drape into place, as shown. Select both elements and group them.



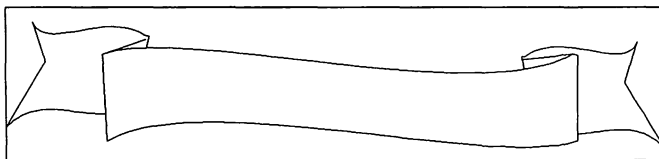
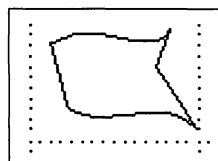
Moving the bottom half of the drape into place

Now draw the trailing drapes:

1. Using the Quill, draw a small compound curve, as shown at the right.
2. Bend the second tangent line to point inward, then draw the two straight lines that make up the ribbon ends. Bend the last tangent line to begin the second compound curve.
3. Draw the second curve, then complete the element by drawing a straight line between the second curve and the first curve.
4. Flip and copy this element. Click on the Selector icon and position both elements on the middle drape. Use the **Put In Back** command to place them behind it.
5. Draw two straight lines to connect the drape sections visually. Your banner should now look like the illustration below.
6. Select all elements and group them.



You've finished the basic outline of the banner. At this point, when you turn on the fill function, the banner appears to contain extra lines. "Joining Curves" in the following section explains how to remove these lines to properly finish the banner.



This exercise demonstrates these rules governing connecting straight lines and curves:

- To connect a straight line to the second anchor point of an existing curve, you simply click at the point where you want the straight line to end. GEM Artline automatically draws a straight line from the curve's anchor point to the point you've just selected.
- To add a curve to an existing straight line, you hold down the Alt key before setting the curve's first anchor point. From then on, you draw the curve just as you would any other curve.

Summary

In this section, you learned how to use the Quill to draw:

- straight lines
- three kinds of curves—simple, compound, and joined
- figures made of straight lines and curves
- connected, non-tangent curves

Editing Curves



In this section you will learn how to use the Plane tool to edit curves that have already been drawn. With the Plane, you can select one or more points in a completed curve and move them about the drawing surface, changing the shape of the curve. You can also use the Plane to copy segments of curves, to cut connected curves into separate segments, or to join curves, creating a connected curve from separate segments.

“Joining Picture Elements” and “Adding to Existing Curves” use the banner and apple art that you created if you completed Section 6. Since you saved the art as symbols, you can use them as often as you need, without affecting the original artwork.

You will find further examples of editing curves in “Tips and Techniques,” later in this manual.

Note: You can edit only an individual curve or connected curves—not curves contained in groups. This limitation protects completed and grouped picture elements; the plane function does not register their existence.

When you select the Plane tool, GEM Artline automatically turns off the fill in any picture elements on the drawing surface (as if you had chosen the **Fill Off** command from the View Menu). This allows you to work on anchor points and curves more easily. If you choose the **Fill On** command or press the F10 key, GEM Artline automatically switches to selection mode.

Selecting the Points on a Curve

The following list presents four ways to select the points on a curve:

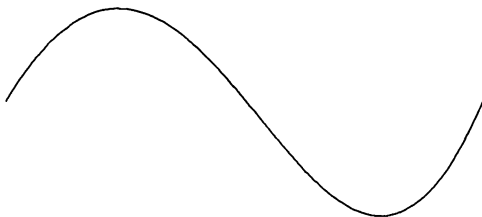
- Drag a rubber rectangle around part of a curve, the entire curve, or more than one curve. GEM Artline selects the anchor points that fall within the rectangle. For example, if you drag the rectangle around the entire curve, all the curve’s anchor points are selected.
- To select all anchor points on a curve, you can press the Alt key while you click on the curve.

- To select a single anchor point, click on that point. To select an additional point when one or more points are already selected, or to de-select a point without affecting other selected points, shift-click on the point you want to select or de-select.
- When only one anchor point is selected, press the left-arrow key to select the previous point in the drawing sequence or the right-arrow key to select the next point in the sequence. You can continue to press the left-arrow or right-arrow until you reach the first or last anchor point on the curve.

A Practice Curve

In this exercise you'll draw a curve and then use the Plane to select its anchor points.

1. Display the File Menu and choose the New command to clear the screen. Switch to full view and draw a practice curve like the one shown below. Double-click when you've completed the curve.



2. Click on the Plane tool in the Toolbox.

3. Press the Alt key and click on the curve. All of the anchor points on the curve are selected. The curve on your screen looks like this:

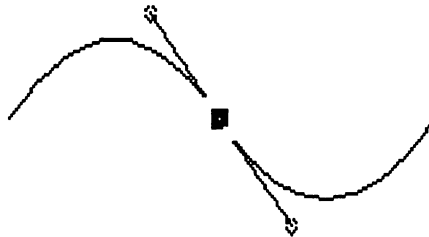


Curve with All Points Selected

Note how the anchor points are marked—an **x** for the first point of the curve, a plus (+) for the last point of the curve, and small boxes for the other anchor points. When the beginning and end of a curve use the same point (which is not the case here), the **x** and the + overlap to form a star (*).

4. Now you'll select each anchor point individually. Start by dragging a small rubber rectangle around the middle anchor point.

The middle anchor point is selected, and the other anchor points are de-selected. Because only one anchor point is selected, its tangent line and direction points are also displayed.



Curve with Middle Point Selected

5. Select the first anchor point by dragging a rubber rectangle around it. The middle anchor point is de-selected, and the first anchor point and its tangent line and single direction point appear.



Selecting an Anchor Point

6. Shift-click on the last point of the curve. Note that, because you shift-clicked, the first anchor point remains selected. Two points are now selected, and the tangent lines and direction points disappear.



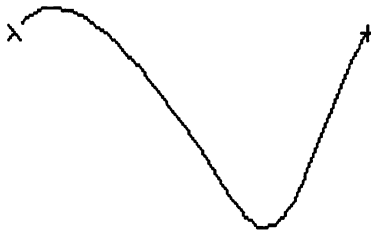
Curve with First and Last Points Selected

Now you know how to select the points on a curve. Keep the first and last points of your practice curve selected, and go on to the next exercise, in which you'll move the anchor points on the drawing surface.

Moving Anchor Points

To move the two selected anchor points:

1. Point to one of the selected points and press and hold the mouse button down. While you're holding the button down, the pointer changes to an arrow head.
2. Drag straight up toward the title bar and then release the mouse button. Note that *both* selected anchor points move with the mouse, although their relative positions (the distance between them, both horizontal and vertical) remain the same. Your screen should now look like this:



Curve after First and Last Points Moved

As you can see, moving selected anchor points is not the same as moving the entire curve. The shape of the curve has changed considerably because the middle anchor point did not move at all.

Using the Move Command

You can also move points by specific distances with the **Move** command:

1. Make sure the first and last points of the practice curve are still selected.

2. Display the Edit Menu and choose the **Move** command. The Move Point(s) dialog appears:

Move Point(s)

Move by 02.00 inch

Move by 02.00 inch

of copies 00

3. Enter 2 (inches) in both fields and select Right and Down. Click on the OK button.

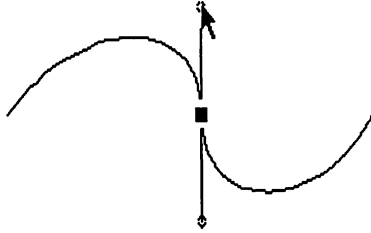
The anchor points move two inches down and to the right.

Moving Direction Points

You can change the shape of a curve by moving the direction points of an anchor point. You can make this change to only one anchor point at a time.

1. Select the middle anchor point of your connected curve by dragging a rubber rectangle around it. The anchor point appears with both of its direction points.

2. Place the pointer on the upper direction point and drag up and to the left, as shown below:



Moving Direction Points

The direction point moves with the mouse, causing the curve to change shape. At the same time, the other direction point moves in the opposite direction, so that the distances between the anchor point and the two direction points remain the same.

Bending the Tangent Line

Using the Alt key, you can bend the anchor point's tangent line. Depending on which direction point you drag, you change one curve's shape without affecting the other curve.

Make sure the middle point of the practice curve is still selected from the last exercise. Hold the Alt key down while you drag the upper direction point downward. Note how the curve on the left changes shape, while the curve on the right stays the same.

Copying Curve Segments

You can use the Plane to copy one or more curves.

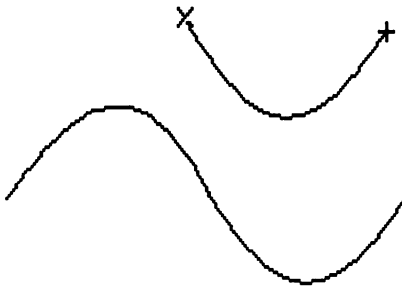
1. Select the last two anchor points from the practice curve and then choose the Copy command from the Edit Menu.

The curve defined by these points is copied directly over the old curve segment. The anchor points of the new curve are selected, while the old points are de-selected.



2. Drag one of the anchor points of the new curve about an inch upward.

You can now see both elements: the original curve unchanged, and the new curve with exactly the same form as the original.



Note: This technique only works when the selected anchor points define one or more complete curves. In other words, if you had selected the first and last anchor points, which are on different curves, you would not have been able to copy either curve.

Cutting Curves

You can split a curve into two curves at an anchor point:

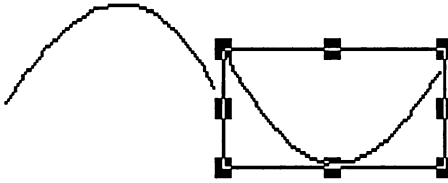
1. Switch to selection mode and delete the segment copy made in the last exercise. Then switch back to plane mode.
2. Select the middle point of the curve, then choose Cut from the Arrange Menu.

The curve has been 'cut' into two parts. There's a star now where the middle anchor point was: the first point of one curve lies exactly on the last point of the other curve.



Curve after Being Cut

3. Switch to selection mode and move the second curve upward a bit.
You can now clearly see that it is two separate curves.

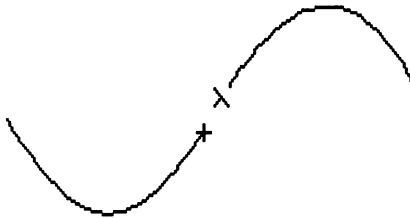


Joining Curves

You can join separate curves to form a single curve. Using both **Cut** and **Join**, you can insert segments into an existing curve.

The two curves used in the last exercise should still be on your screen. If not, draw new ones. To join them:

1. Select the right curve and bring it into the foreground with the **Put In Front** command in the **Arrange** Menu.
2. Click on the **Plane** icon and select the last point of the first curve, and the first point of the second curve.



Marked Endpoints

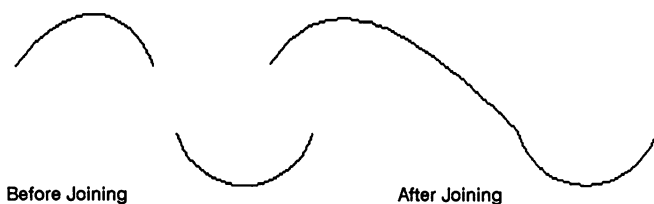
3. Choose **Join** in the Arrange Menu.

The markings for the two points disappear and the two curves are joined into one.



Joined Curves

Note: The endpoint of the curve in the background is always moved to the endpoint of the curve in the foreground (see the following illustrations).



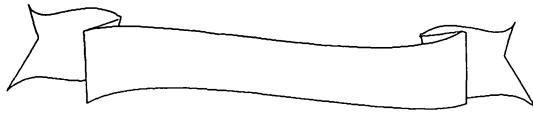
The right curve was in the foreground before joining



The left curve was in the foreground before joining

Joining Picture Elements

If you completed Section 6, “Combining Curves and Straight Lines,” you drew this element and saved it as a symbol:



To form the middle drape of the banner, you grouped two separate elements. You can see that they are separate elements when you turn on the fill function. The lines that close each element are displayed.

In this section, you’ll join these elements and make the drape a single element by joining an end point of one element to the beginning point of the other.

1. Load the symbol file containing the banner symbol. Click on the Symbols icon and draw the banner on the drawing surface.
2. Ungroup the symbol into its individual elements.
3. Click on the Plane icon, then select the lower left corner of the drape by dragging a rubber rectangle around it. When selected, the beginning point of the top element and the endpoint of the bottom element are marked with a star.
4. Choose **Join** in the Arrange Menu. Click on the Selector icon then choose all elements and group them.
5. With the banner selected, choose the 48% gray scale level. Then press the F10 key.



The banner is displayed at this gray scale level. The middle drape no longer contains extra lines because it is now a single element instead of two grouped elements.



This exercise demonstrates that, in order to join two elements, you need join only one point of one element to one of the other. You needn't join all the endpoints.

Adding to Existing Curves

Although using **Cut** and **Join** allows you to edit quite comfortably, it is sometimes better to simply add to an existing curve. In this section, you'll add to, or rather, take away from, the apple you drew in Section 7, "Connecting Curves." You'll add a curve to the apple that takes a bite out of it. When you are done, it will look like the apple in the illustration below.

In Section 7, you saved the apple picture as a symbol. If you haven't yet done so, retrieve the symbol with the **Load Symbols** command. Then draw the apple on the drawing surface.

To take a bite out of the apple:

1. Click on the Symbols icon and draw the apple on the drawing surface. With the symbol selected, choose **Ungroup** from the **Arrange** Menu.

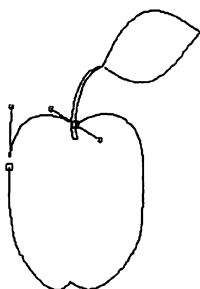


2. Click on the Selector icon, place the pointer on the apple element, and double-click.

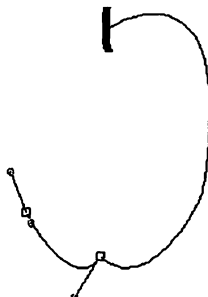
GEM Artline automatically activates the Quill icon. The apple now appears as it did when you drew the last curve, before you closed it.

Now you can edit the curves in the apple.

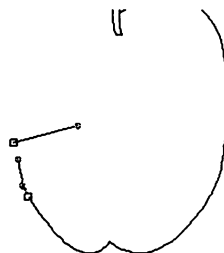
3. Press the Backspace key twice. Two anchor points are deleted from the apple. It now looks like the figure shown below at the left.
4. Place the cross above the last anchor point. Draw a short curve to just below the middle of the apple.
5. Press the Alt key, place the cross on the new anchor point, and bend the tangent line to change the direction of the curve.



When you re-activate the Quill, the last curve is displayed with its tangent lines.



Backspace twice to delete the last curve.

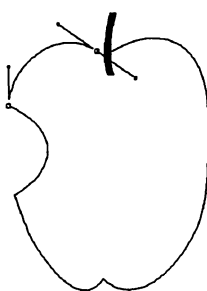


Draw a short curve, then bend the tangent line.

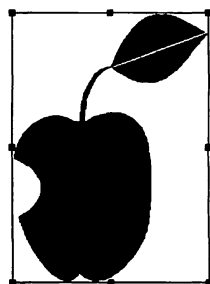
6. Draw the new curve, then change the direction point to the vertical.
7. Draw one more curve to complete the apple. Click on the Selector icon and group all the elements.



Draw the "bite," then change the direction to the vertical.



Draw the last curve.



Group all elements in the apple.

This exercise demonstrates a very powerful feature. You can edit the lines and curves of any graphic element using this method, including text. Here are some key points to remember:

- Ungroup elements before re-activating the Quill.
- When you re-activate the Quill, the last two anchor points that you drew are available to edit. To edit other points, either backspace until they are displayed or switch to the Plane tool.
- Before switching to another tool, double-click to de-activate the Quill.

Summary

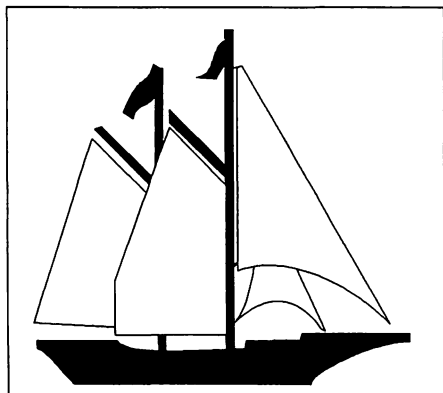
In this section you learned how to:

- select points on a curve
- move individual anchor points
- change the shape of one curve without affecting existing curves
- copy curve segments
- split a curve into two curves
- join separate curves
- add segments to a curve

In the next section you will use some of these curve drawing skills to perform some basic image tracing functions.

Tracing Images

Typically, you trace an image to convert it to the GEM Artline format so that it can then be modified, enlarged or reduced. With conventional images, enlargement and reduction are impossible without loss of quality. By tracing images with GEM Artline, you can maintain image quality. In this section, you'll load an image of a clipper ship onto the drawing surface background and trace it using the Quill tool. When you're done, your picture will look like this:



Note: The image tracing functions described in this section require expanded memory. If your system does not have expanded (EMM) memory, these functions are not available. For more information, see "Hardware Requirements" in Section 2.

Several other images you can trace are included in the GEM Artline package. These images are named SAMPLE_2.IMG through SAMPLE_5.IMG. You'll find them in the directory \GEMAPPS\IMAGES.

The images SAMPLE_2.IMG and SAMPLE_3.IMG contain simple example curves you can load and trace if you want to practice tracing curves. If you have difficulty placing anchor and direction points, load SAMPLE_4.IMG and SAMPLE_5.IMG. These files contain the same practice curves with suggested settings for the anchor and direction points.

What are Images?

Images are pictures made up of black and white dots, or pixels. The pixels are arranged in a bitmap of the picture (see "Terminology," Section 1).

You can load any image that is in one of the formats supported by GEM Artline, provided enough memory is available. Approximately one megabyte of memory is required to load an 8" x 10.5" image. For smaller images, less memory is needed.

GEM Artline currently supports three image formats:

- The GEM Image Format (files with the .IMG extension), which is created by programs such as GEM Scan, GEM Paint, AVR MegaScan, and HALO DPE. The GEM Image Format is the default format.
- The PCX File Format (files with the .PCX extension), which are created by PC Paintbrush and Publisher's Paintbrush. Pictures from some Windows applications can also be converted to PCX format.
- The TIFF File Format (files with the .TIF extension), which is supported by many programs, including GEM Scan and HALO DPE.

The quality of an image depends on the number of pixels contained in the bitmap, or the image's resolution. Resolution, in turn, depends on the type of display used to create the image (see "Terminology," Section 1). Distortion occurs when an image is enlarged or reduced, because the number and size of the pixels in the bitmap are fixed.

In contrast, GEM Artline does not store pictures as bitmaps; instead it stores graphic elements such as curves or rectangles as coordinates. As you enlarge or reduce a graphic element, GEM Artline adjusts the coordinates, so that every detail of your picture is kept intact, even at very large or small sizes. The coordinates are converted to pixel-based images only for output on a display or printer.

Tracing Guidelines

Always try to think about the best way to go about tracing a picture before you begin. A little planning can make the work go much faster and help you keep an overview of your work in mind if you're tracing on a large image.

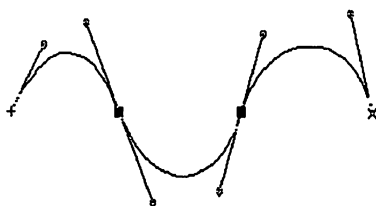
Tracing is easier if you follow a few simple rules:

- When choosing images to trace, select those with high contrast, such as drawings, sketches, cartoons and symbols. These work best as backgrounds for tracing. Photographs with high contrast are also suitable.
- Whenever possible, avoid bending the handles using the Alt key. Symmetrical direction points make a smooth transition from one curve segment to the next.
- Pay attention to the shape of the curve beyond the point where you're working. Think ahead to where you're going to place the next anchor point; it makes the work a lot easier.
- Be aware of the magnification in which you're working. If you select the 100% display (normal display), every point displayed on the screen will be printed on a 300 dpi printer. It's usually unnecessary to work on the details in a higher magnification because they won't be noticeable on the hard copy anyway.
- Try not to use too many points—the number of points that an element can contain is limited to 128. You can calculate the number of points in a curve using this formula:

$$3a - 2 = p$$

where **a** equals the number of anchor points in the curve and **p** equals the number of points.

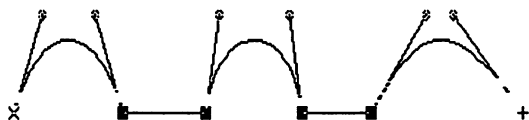
For example, these connected curves contain ten points:



- For elements containing both curves and straight lines, there is a different formula:

$$3a - 2b - 2 = p$$

where **b** equals the number of straight lines contained in the element.



Using this formula, you can see that the curve shown below contains 12 points.

Preparing to Trace

Before you can trace an image you need to:

- Load the image.
- Choose the image display settings.
- Enlarge your view of the image.

Loading the Image

Loading an image is similar to opening a file:

1. Choose the **Load Image** command from the Page Menu.

The **ITEM SELECTOR** appears on the screen. It lists the files in the `\GEMAPPS\IMAGES` directory that have the `.IMG` extension.

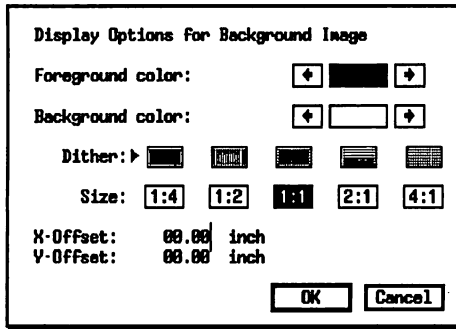
2. Select the file name `"SAMPLE_1.IMG."`

The image appears on your screen in the upper left corner. It probably appears very small and difficult to see. In the next few steps, you'll adjust the way the image is displayed to make it easier to trace.

Choosing Image Display Options

The next step depends on whether your screen is monochrome or color. To better differentiate between the image and your drawing, you can either "dither" the image (for monochrome screens) or have it be displayed in a lighter color (for example, yellow or bright blue).

1. Choose **Image Options** from the Page Menu. The Display Options dialog appears on the screen:



2. If you have a color monitor:

Change the Foreground color by clicking on the arrow to the right of the appropriate color field. With each click, the color changes. Click until the color field contains cyan (blue).

If you have a monochrome monitor:

Make sure the Foreground color is black and the Background color is white. If you need to change colors, click on the arrow to the right of the appropriate color field.

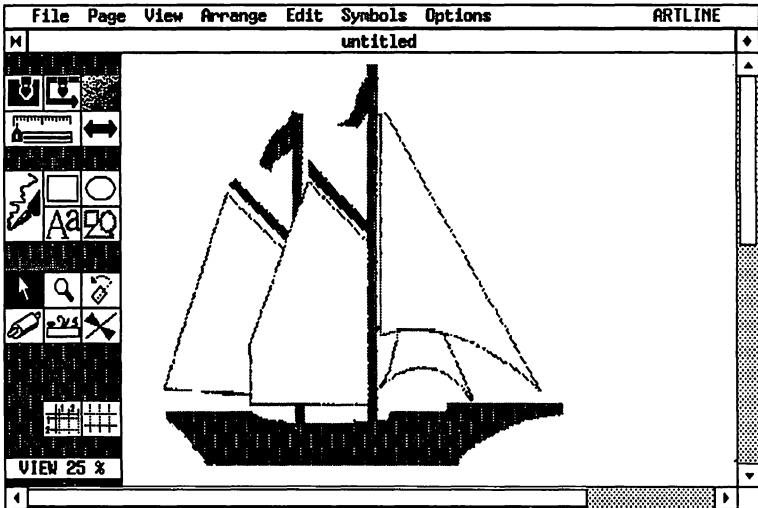
Click on the middle Dither button to choose the 50% gray scale pattern.

3. Make sure the 1:1 button in the Size field is highlighted. This selection displays the image at a one-to-one ratio.

The dialog disappears and the image is redisplayed with the new values.

Setting the View Size

The image you just loaded shows a stylized clipper ship. Before you begin tracing the image, make sure it fills the work area as much as possible. The optimum zoom level can vary according to the resolution of your monitor. For example, on an EGA monitor, a 25% view fills the screen, as shown below. If you need to change the view, use the Magnifier tool or the plus or minus keys.

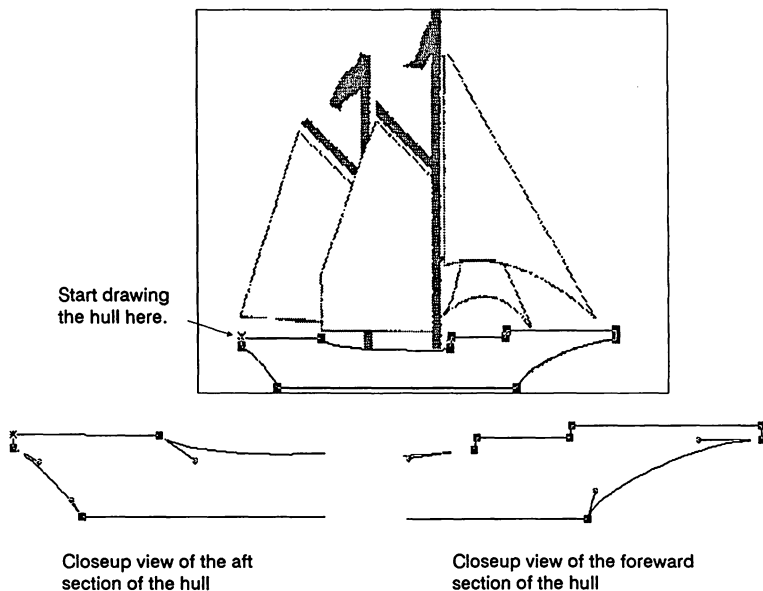


Tracing the Image

Begin by tracing the hull of the clipper:

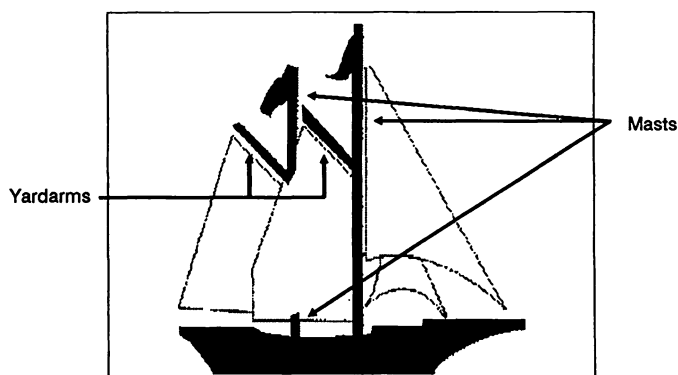
1. Click on the Quill icon and trace the hull by drawing the lines and curve segments that follow those in the image.

The illustrations below show where anchor and direction points should be placed in order to obtain good results. Don't worry if the lines are not perfect. You can correct them later using the Plane tool.

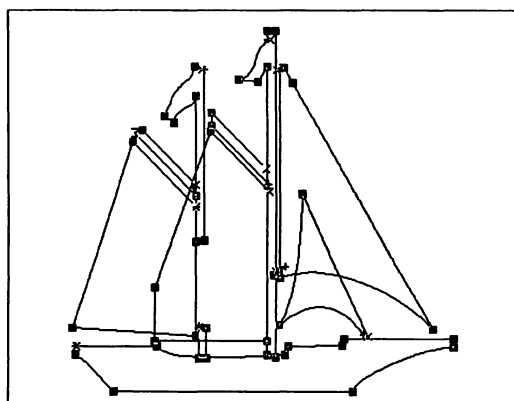


2. When the hull is complete, double-click. Then trace the masts, yards (the horizontal members connected to the masts), and the flags.

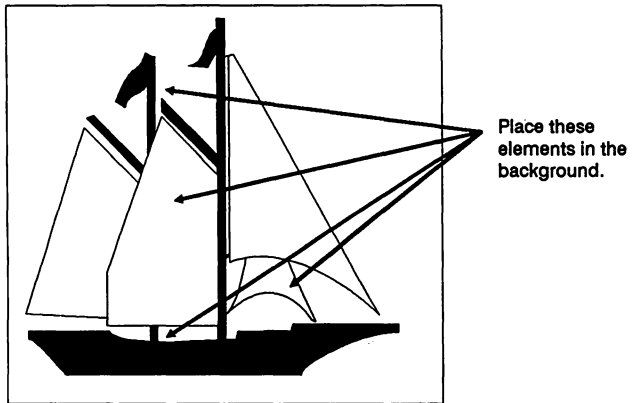
When you're done, the masts should look something like this:



3. Trace the sails. The two front sails are each made up of three simple curves. The two rear sails consist only of straight lines.
4. Connect the large front sail to the front mast by drawing two small straight lines. This illustration shows all the anchor points in the ship:



5. When you finish the sails, use the **Put In Back** command to place in the background the masts and the two sails shown here:



Now save the ship as a file or as a symbol.

You will soon find that you can follow the given contours easily and that you develop a feeling for placing the mouse to draw a new line or curve segment relatively quickly.

Summary

In this section, you learned some practical methods for tracing images. You should now be able to use all Quill functions confidently, whether drawing free-hand or tracing scanned images.

Text Functions

In the first part of this section, you'll learn how to create text in various fonts of different sizes. In the second part, you'll create a text logo and save it.

Creating text logos is perhaps GEM Artline's most attractive and sophisticated capability. You can use the text functions to create logos, signets, titles, and transparencies.

GEM Artline can treat text items as graphic elements or as fonts. You can manipulate a text element as a whole or break (ungroup) it into individual letters. Using Artline's Edit tools, you can graphically modify text elements in exactly the same way as all other picture elements.

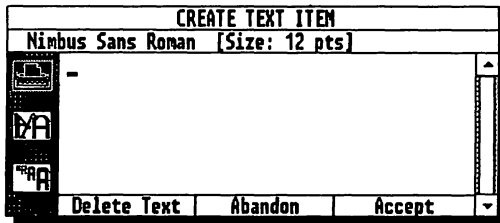
Creating Text

In this exercise, you'll type a word, then choose its font type and text attributes. First clear the screen with the New command and switch to normal view (100%).



1. Click on the Text icon in the Toolbox. It becomes highlighted.
2. Click anywhere on the drawing surface. The lower left corner of the first letter you create will appear at this point.

GEM Artline displays the Create Text Item Window. The Typewriter icon is highlighted; you can enter text when this icon is highlighted. In the upper left corner of the window is a text cursor.



3. Type the word "Hello."

As you type, the characters appear in the first line of the window. If you type a long sentence, they automatically "wrap" to the next line. If you type the wrong character, you can delete it with the Backspace key.

To delete all of the text in the window, click on the Delete Text button. Artline confirms the deletion before clearing the window.

Choosing Fonts



1. Click on the Font icon on the left side of the window.

The window now displays a list of the available fonts.

2. Click on the font name "Nimbus Sans Bold."

The line containing the font name is highlighted. The name also appears in the status line at the top of the window. The point size of the font is in square brackets next to the name in the status line. One point equals 1/72 of an inch.



3. Click on the Accept button at the bottom of the window.

The window disappears and the word "Hello" appears on the drawing surface in 12-point Nimbus Sans Bold at the point where you originally clicked the mouse.

Changing Text Attributes

You can change text attributes once you've typed the text.

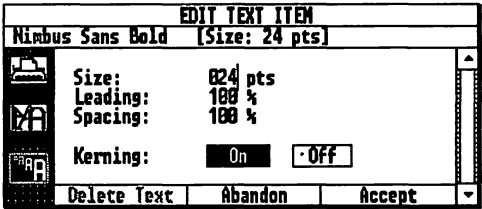
The word "Hello" should still be on the drawing surface and be selected from the last exercise.

1. Click on the Pointer icon, then double-click on the word "Hello."
GEM Artline displays the Edit Text Item Window.



2. Click on the Attribute icon.

The window now displays a list of text attributes:



You can change the value in any field. Use the Backspace key to delete an existing value and type in a new value. To clear a field, press the Escape key.

Use these guidelines to fill in the text attribute fields:

- Size:** Enter the point size of your text. In GEM Artline you always set the text size in "points", the most commonly used units for text size. The point size is the height in 1/72" as measured from the baseline to the top of a full size letter (such as capital A).
- The point sizes you can create are virtually unlimited. However, the quality of extremely small and large font sizes varies among printers. Experiment to determine which size range is best for you.
- Leading:** This controls the inter-line spacing of your text.
- Spacing:** This controls the inter-character spacing.
- Kerning:** This turns kerning on and off. Kerning automatically regulates inter-character spacing. For example, it reduces the spacing between wide characters, such as 'V' and 'A' to improve their appearance and use of space.

3. Delete the value in the Size field and type **24**. Click on the Accept button.

The window redisplay the word "Hello." Click on Accept once more.

The Edit Text Item Window disappears and the word "Hello" now appears on the drawing surface.

As long as you do not modify the text, GEM Artline continues to treat it as text. However, once you modify a text element graphically, for example, by stretching, it becomes a graphic element.

Creating a Text Logo

GEM Artline's unique editing functions allow you to modify text elements in the same ways you edit graphic elements. You can break a text string and edit individual letters, distort or scale them, rotate them, redesign them, add graphic effects—the possibilities are virtually endless.

In this section, you'll use some of these functions to create this logo:



First, clear the screen with the New command. Then follow these steps:

1. Click on the Text icon, then click in the drawing surface where the "P" is to appear.
2. Type the character "P" in the Create Text Item Window.
3. Select the Font icon and choose the Nimbus Serif Roman typeface name.
4. Select the Attributes icon and type 48 in the Size field. Set the Kerning field to Off, then click on Accept. The character "P" appears on the drawing surface.

Editing Text as a Graphic Element

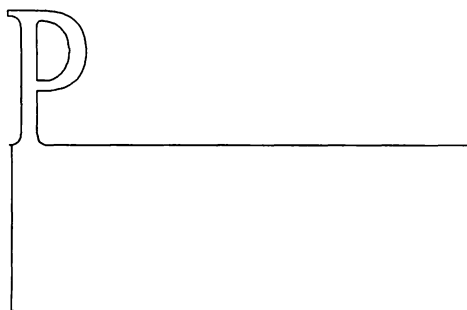
Text strings and individual characters have the Grouped attribute when you first create them. Before you can edit a text string or character with the Plane, you must "Ungroup" it.

1. Choose **Ungroup** in the Arrange Menu.
2. Click on the Plane icon. The letter "P" becomes "hollow," that is, only its outline is displayed.
3. Select the two base points of the character by drawing a rubber rectangle around them. When selected, the points appear as small boxes.
4. Click on a point and drag downward. The base of the character follows the pointer.
5. Select the two *right* points of the base with the rubber rectangle and drag to the right, as shown below.



Selecting the base points of the letter "P"

You're now ready to place the word "UNLIMITED" inside the base.



6. Select the Text icon and click at the location where you want the lower left corner of the first letter to appear.

7. Type the word "UNLIMITED" in upper case letters, then choose the Nimbus Sans Roman font and 24 point size, as explained above. Click on Accept.



The word "UNLIMITED" appears inside the base of the letter. Using the Plane, adjust the base to fit the word.

8. Select the Pointer icon, select the word, and then give the word a white border and white fill color. Then choose Fill On in the View Menu to show the white letters on the black background.

The text logo now looks like this:

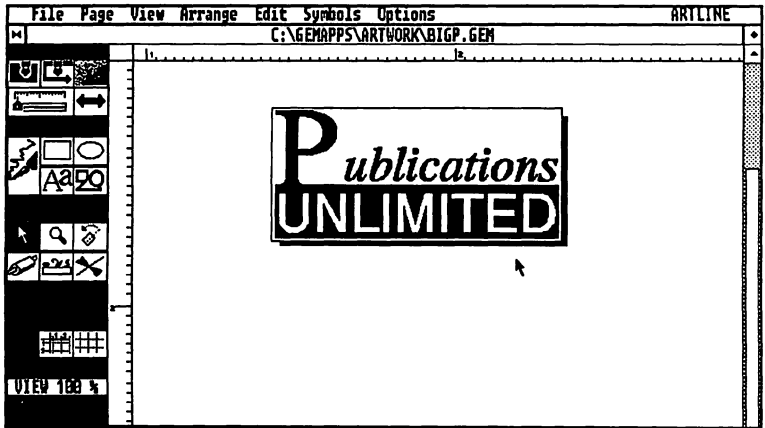


9. Type "ublications" in 19-point Nimbus Serif Italic font, as explained above. Select the word with the pointer and align it with the right edge of the word "UNLIMITED."

10. Choose the **Select all** command in the Edit Menu. All elements of the picture are selected. Group them with the **Group** command in the Arrange Menu.
11. Click on the **Rectangle** icon and draw a rectangle that encloses the logo. When the rectangle appears, it completely covers the logo. Choose **Put In Back** in the Arrange Menu, then fill the rectangle with white.
12. Create a "shadow" rectangle by copying the rectangle, placing the copy behind the logo, and filling it black.

To finish the logo, select all items and group them.

Your logo is now complete. Next you'll save it as a symbol.



The completed text logo

Saving the Logo as a Symbol

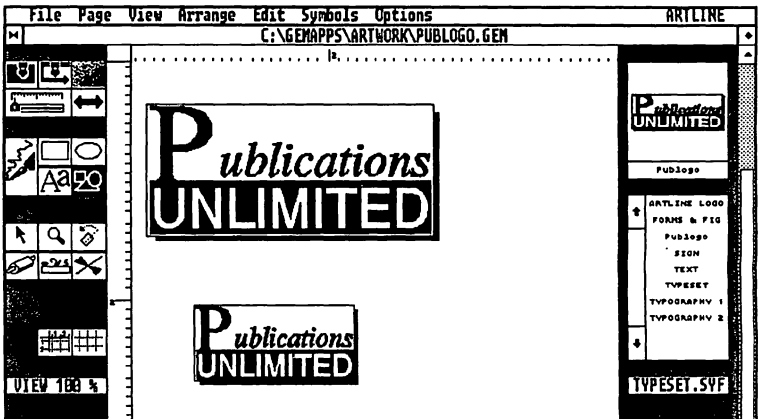
You can save the logo as a new symbol file (.SYF file) or as a symbol within an existing symbol file. In this exercise, you'll save it as a symbol within an existing symbol file.

The logo is displayed on the screen.

1. Choose **Load Symbols** in the Symbols Menu and load the symbol file **EXAMPLES.SYF**.
2. Choose **Make Symbol** in the Symbols Menu. GEM Artline displays the Make Symbol dialog.
3. Type the name **PUBLOGO** in the "Symbol name" field. Select **Yes** in the "Maintain aspect ratio" field, then click on **OK**.

The name **PUBLOGO** appears in the Symbol Selector. When you click on the name, the logo is displayed in the symbol field.

Your symbol is now available for use. Click on the Symbol icon and draw some samples of **PUBLOGO**, as illustrated below.



Summary

This is the end of Part II of the manual. You should now know the basics for creating just about any image you wish. In this section, you learned how to create and edit text elements. The next part of the manual shows you how to use GEM Artline more effectively and how to produce some special text and graphic effects.

Part III: Tips and Techniques

This part of the manual shows you how to work more effectively with GEM Artline. You'll learn some simple, quick techniques for creating interesting text and graphic effects. These techniques will make using GEM Artline easier overall and will help to spur your creativity.

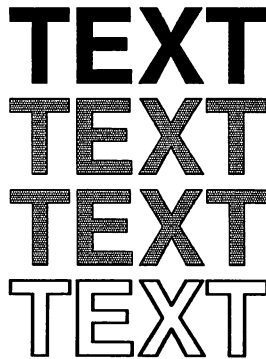
Special Text Effects

You can obtain interesting text effects with just a few fonts and with little effort. This section teaches you how to do such things as change text borders, change character spacing, and produce these special effects:

- shading text
- shadowing text
- arranging text along a circle

Transforming a Simple Word

This exercise shows you how to produce this effect:



TEXT
TEXT
TEXT
TEXT

1. Select Full view by clicking on F1 and then click on the Text icon.
2. Click in the middle of the upper half of the drawing surface. When the Create Text Item Window appears, type the word TEXT in 24-point Nimbus Sans Bold. Click on Accept.

The word TEXT now appears on the drawing surface.

3. Click on the Selector icon in the Toolbox, then select the word you have typed. Choose **Move** in the Edit Menu. After you enter the values shown here, click on **OK**.

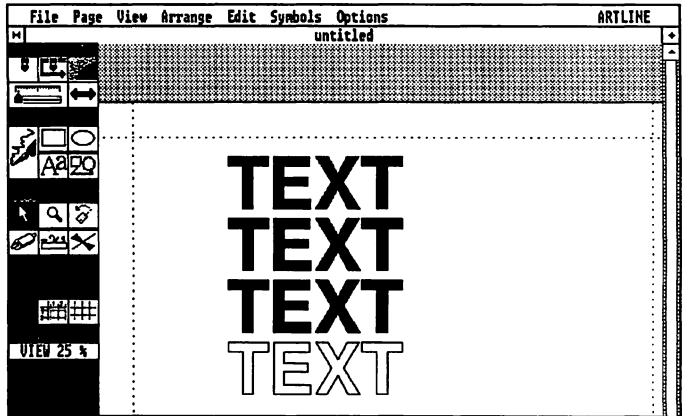
Move Object(s)
Move by 00.00 inch
Move by 00.00 inch
of copies 03

The word **TEXT** is copied three times, as shown below.

4. Select the second and third words by dragging a rubber rectangle around them or by clicking on the second word and shift-clicking on the third.
5. Click on the Gray Level icon in the Toolbox and choose the 48% value. The words are redrawn with 48% gray shading when **Fill** is turned on.
6. Select the fourth word and set the border width to 1 by moving the border width slider (on the left side of the Toolbox) almost to the left end.
7. Set the fill color of the fourth word to white by clicking on the Fill Color icon in the Toolbox and selecting white.

TEXT
TEXT
TEXT
TEXT

The text should now look like this:



Shadowing Text

You can easily create text (or any other element) that "casts a shadow." Here's how:

1. Clear the screen by choosing the **New** command in the **File** Menu.
2. Click on the **Text** icon in the **Toolbox**, then click on the center of the drawing surface. When the **Create Text Item Window** appears, type the word "TEXT."

Select the word and then choose the **Move** command in the **Edit** Menu. Set the copy counter to **1** and move the word **0.01** inch down and **0.01** to the right.

TEXT now appears twice on the screen, one copy almost covered by the other.

3. Select the top word and set the fill color to white, by clicking on the Fill Color icon in the Toolbox and choosing "White."

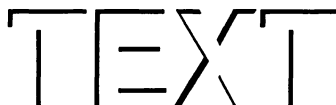
The white word on top of the black word creates a shadowing effect as shown below:



TEXT

You can create other interesting effects by varying the border width:

1. Select the white word TEXT and set the border width to 0. This produces the following effect:



TEXT

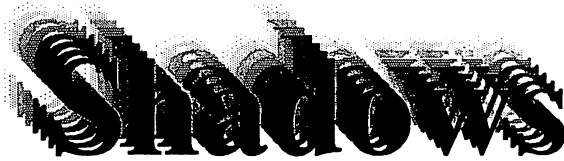
2. Select the black word TEXT by control-clicking on it.
3. Set the fill color of the black word to white and set the fill color of the white word to black. The effect looks like this:



TEXT

Trailing Shadow Effect

In this section, you'll create the "trailing shadow" effect shown below:



Note: Since the following operations involve some complex artwork, you should set redraw to Speed to save time. To do this, choose *Preferences* in the *Options* Menu. When the *Preferences* dialog is displayed, change the *Performance* setting to *Speed*.

When redraw is set to *Speed*, the display image quality is reduced; if you want to see actual shapes and details in the pictures, set the *Performance* back to *Quality*. (Keep in mind that drawing then takes longer)

You can further improve processing speed by selecting *Fill Off* in the *View* Menu. This turns the fill function off.

Before you begin to draw, clear the screen with the *New* command and switch to *Normal* view by clicking on the F2 key. Then, follow these steps:

1. Type the word "Shadows" in 24-point Nimbus Serif Bold.
2. Switch to the selection mode and select the text. Select the *Move* command. In the *Move Object(s)* dialog, enter 0.02 (inch) in the *Move Right* and *Move Down* fields, then type 7 in the # of copies field.

Eight text elements are positioned, one on top of the other. Now assign them varying gray levels:

1. Select the word on the bottom by pressing the Ctrl key while clicking on the word.

2. Select the 12% gray level for this word by clicking on the Gray Levels icon and selecting 12%.

The command was carried out, even though the screen wasn't redrawn. This is because you turned off the fill function.

3. Press the F4 key. The next text element becomes selected.
4. Shade this element 25% and press the F4 key again. Repeat this process, assigning the next darkest gray level to each word until you reach the top text element. Then turn the fill function back on.

The text should now look like the illustration on the preceding page.

You'll discover other ways to use gray levels and border widths to produce attractive text after you've worked with GEM Artline for a while. If you have a color graphics card, you can experiment with foreground and background colors too.

Changing Character Spacing

You can also vary text using the text attribute functions in the Create Text Item Window. It's possible, for example, to vary the space between characters:

1. Clear the screen with the New command.
2. Click on the Text icon and then on the drawing surface. The Create Text Item Window opens.
3. Type the word "Typography" and then click on the Font Selector icon. The window now displays font names. Select Nimbus Serif Bold.
4. Then click on the Font Attributes icon. Set the font size to 24 points. In the Spacing field, type the value 65(%). This value sets the spacing between the individual characters relative to normal spacing (100%). Our text will be compressed by 35%.

5. Check that the font size is set to 24 points and that the Nimbus Serif Bold font was selected. Exit the dialog by clicking on Accept. When the text is generated, the characters overlap and are illegible.

Typography

6. Click on the Border Color icon and change the border color to white. The text now looks like this:

Typography

You can create the opposite effect using black borders and white fill:

Typography

Spreading out characters is as simple to do as compressing them:

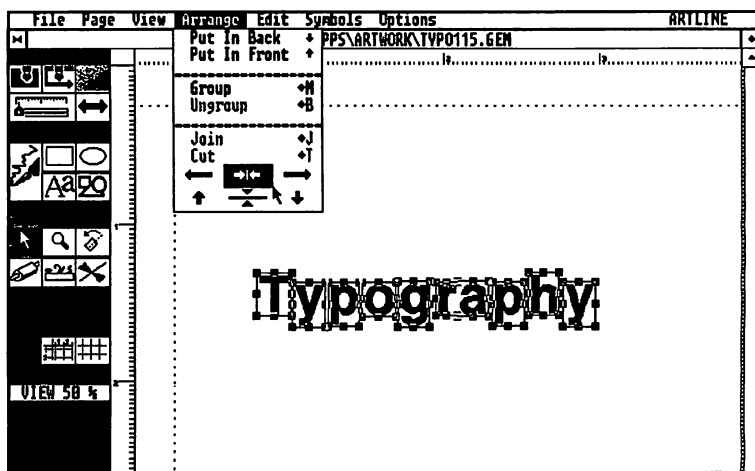
1. Select the word "Typography " and then double-click on it.
The Edit Text Item Window appears; it contains the selected word, provided the text hasn't been rotated, scaled, or otherwise manipulated.
2. Click on the Attributes icon and change the Spacing value to 115. Exit the Edit Text Item Window by clicking on Accept. The text will be noticeably wider; the space between the individual characters is now 15% more than the usual spacing.

Typography

Arranging Text along a Circle

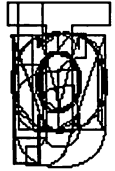
You can arrange text along any path. You can arrange it along a curve or in most any shape. In the following exercise, you'll arrange the word "Typography" in a circle. First clear the drawing surface, then follow these steps:

1. Type the word **Typography** in 24-point Nimbus Sans Bold.
2. Click on the Selector icon and then on the word. Break the text item into single characters by choosing the **Ungroup** command from the Arrange Menu.
3. Center all characters in the middle of the drawing surface by clicking on the **Middle Align** icon in the Arrange Menu, as shown below



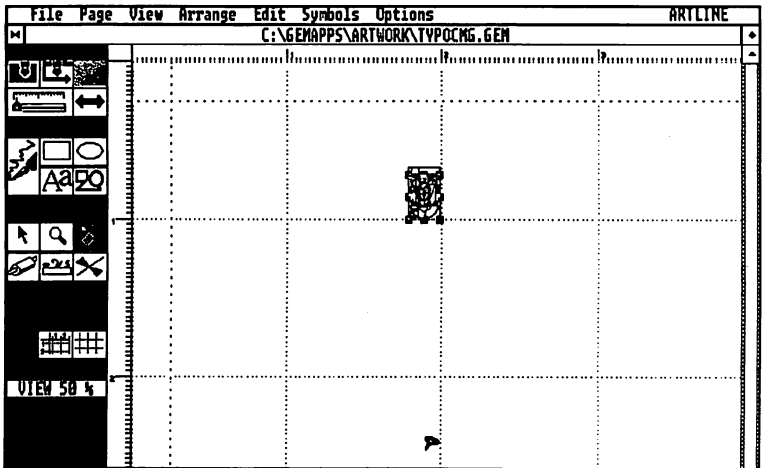
When centered, all of the characters lie in a single-character stack.

4. Select the **Fill Off** command to turn the fill function off. The characters are more legible. Adjust the scroll bar so that the characters just touch the top edge of the drawing surface.

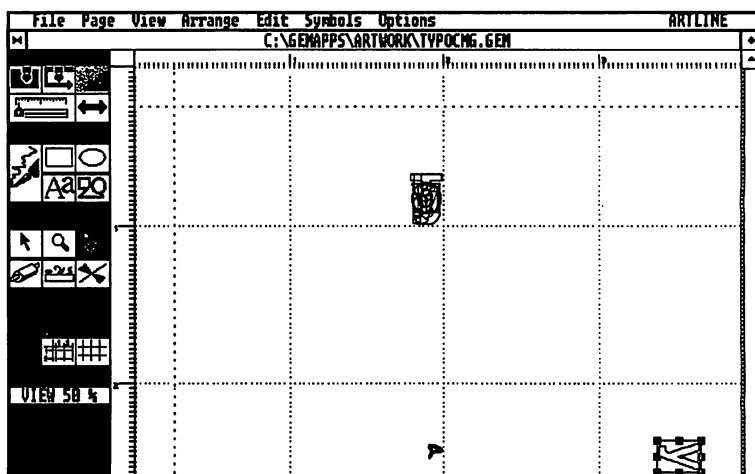


Notice the order in which the characters on the screen are stacked: the last letter of the word **Typography** (y) is on top, the first letter (T) is on the bottom.

5. Click on the **Selector** icon and then click on the letter y, which is on top of the stack.
6. Enter rotation mode by clicking on the **Rotator** icon. Place the thumbtack directly below the pile of characters, almost to the bottom of the drawing surface. Your screen should look like this:



7. Click and hold the mouse button down on the character 'y' and rotate it to the right, as shown below. You may have to adjust the picture in your work area so that all elements remain visible.

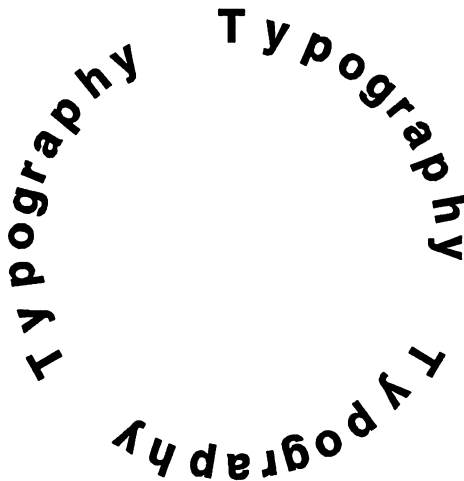


8. Press the F4 key. GEM Artline notes the location of the last selected item and automatically returns to select the next item. Now the 'h' is selected.
9. Rotate the 'h' to the right until it is next to the 'y.' Press the F4 key again and repeat the process until all of the characters are rotated.
10. Click on the Selector icon and group the rotated characters.
11. Click on the Rotator icon. The thumbtack reappears where you placed it before (see the Note below).

12. Press and hold the Shift key down while rotating the word "Typography" by 120 degrees.

GEM Artline makes a copy of the word as it is rotated.

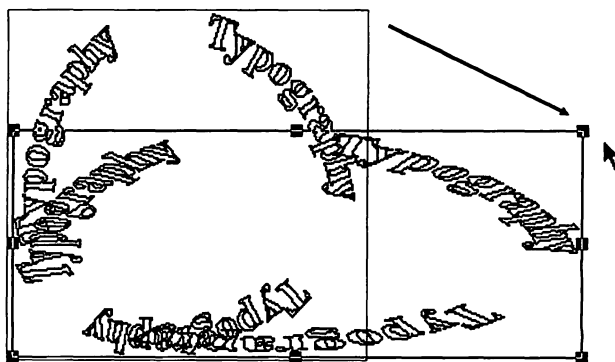
13. Repeat step 11. Your picture now looks like this:



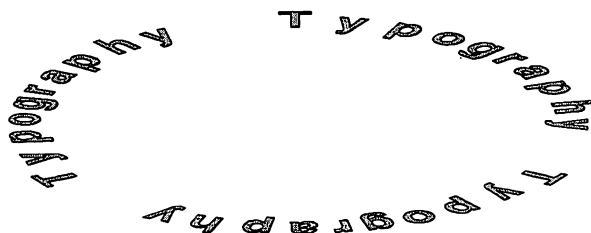
Note: When you've finished using the Thumbtack, you need to "pick it up" to turn off the rotate function. Place the pointer over the small white spot in the center of the Thumbtack and click while holding down the Ctrl key. When the thumbtack lifts off the drawing surface, you can select another tool or re-position it elsewhere.

To create a 3-D effect with the circular text:

1. Click on the Selector icon, select all three text elements, and group them.
2. Drag the top right corner of the frame downward and to the right like this:



This operation produces this 3-D effect:

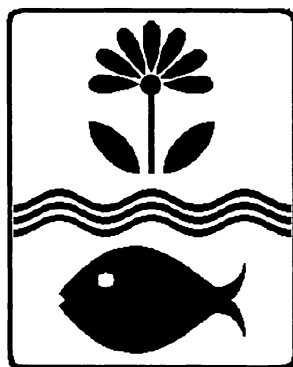


Quick Drawing Techniques

This section shows you how to produce artwork quickly, using techniques that minimize the amount of drawing that you have to do.

These techniques employ GEM Artline's edit functions, such as copy, flip, and rotate. You'll use these functions to create the picture shown here.

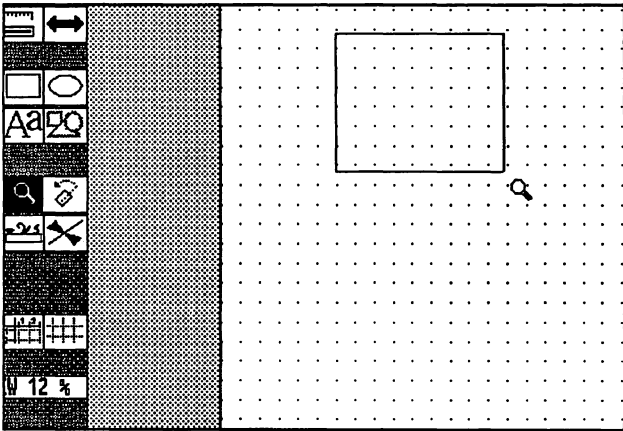
The exercises in this section assume that you are familiar with the techniques presented in Section 6, "Drawing Lines and Curves" and Section 7, "Editing Curves."



Preparing the Page

Before you begin drawing, you need to make a few preparations:

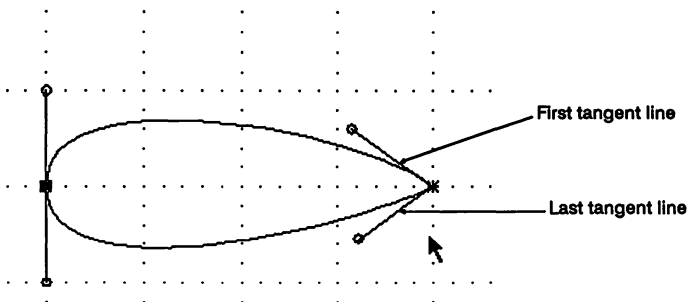
1. Clear the screen with the **New** command and switch to **Full** view.
2. Choose **Page Layout** in the Page Menu, and select the **Portrait** orientation and **Letter** size.
3. Click on the **Magnifier** icon in the Toolbox. Select the upper right-hand section of the drawing surface with the magnifying glass and zoom to a 50% view. (See the picture on the next page.)
4. Choose the **Snap On** command in the Page Menu, then double-click on the **Grid** icon to turn on the grid, and select the 1/16 grid size.



This picture shows step 3 from "Preparing the Page."

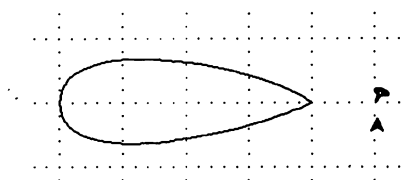
Drawing the Flower

Draw the first petal of the flower with the Quill. Start at the inside point of the petal, as shown below.



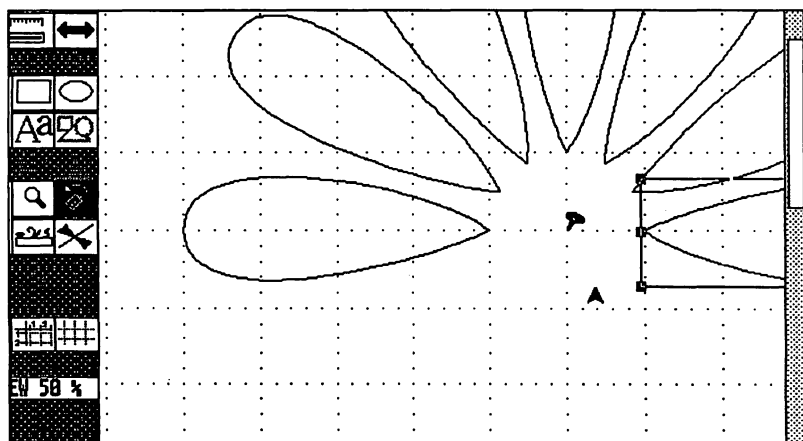
Use the Rotator to generate the other six petals:

1. Select the petal and click on the Rotator icon.
2. Click on the drawing surface about 1/2 inch to the right of the petal. This places the Thumbtack there.



The Thumbtack remains in this position and the pointer assumes the shape of an arrow head.

3. Select the Rotate command in the Edit Menu. The Rotation Angle dialog appears.
4. Type 30 in the Rotation Angle field and 6 in the # of copies field. Click on OK. The petal is copied six times and each copy is rotated by 30 degrees.



Add a circle to the middle to complete the top of the flower by clicking on the Ellipse icon and drawing a circle. Start at the point where the thumbtack was placed and hold the Shift key down while you draw.

Holding down the Shift key allows you to draw the circle around its center point.

Next, draw a rectangle for the flower stem, as shown below.

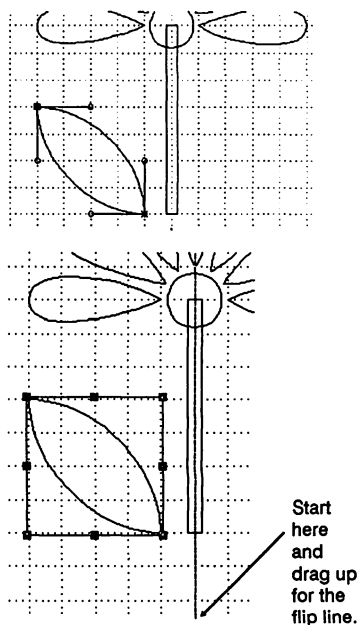
Now you're ready to draw the leaves:

1. Draw the left leaf with the Quill as shown in the example at the right. Make sure that the leaf is selected.
2. Click on the Flip icon. Holding down the Shift key, draw a flip line along the center of the flower. As shown in the lower right figure, the flip line appears as a dashed line. Start beneath the stem and drag the pointer toward the center of the flower. Don't release the mouse button until the View Box indicates an angle of 90°.

When you release the mouse button, the leaf is copied to the right side of the stem.

Select every element in the flower by typing **♦ S**. Group the elements with the **Group** command in the **Arrange** Menu.

You've completed the flower.



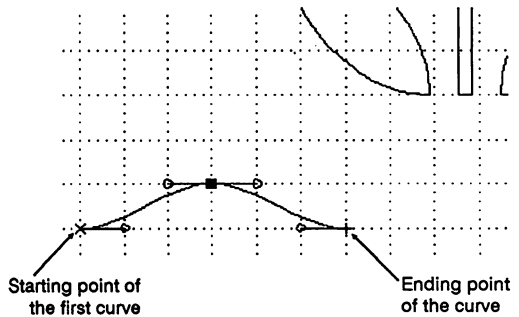
Drawing the Waves

In this section, you'll use the Quill tool and the **Copy** and **Group** commands to create the curves below the flower.

Before you begin, use the right-hand scroll bar and scroll down the view.

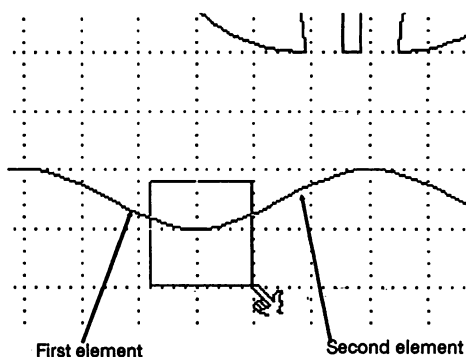
1. Using the Quill, draw the first curve segment of the top wave.

Double-click to complete the curve.



2. Click on the Selector icon. Make sure the curve is selected. Copy the curve twice by holding down the Shift key and dragging it to the right, as shown in the following illustration. Place the beginning point of each curve on top of the end point of the previous curve.
3. Click on the Plane icon.

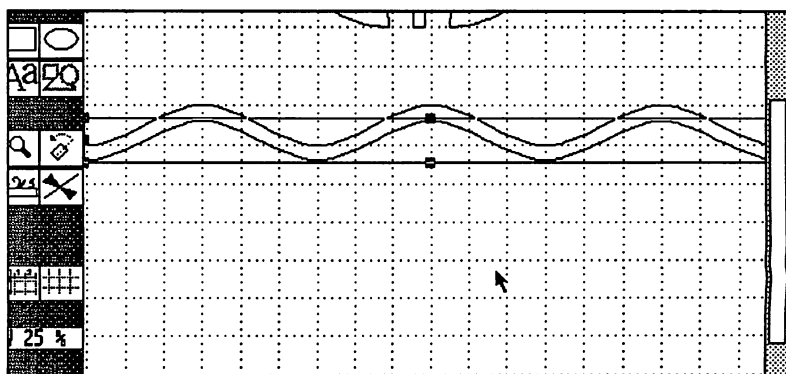
4. Select the end point of the first element and the beginning point of the second element, dragging a rubber rectangle around them as shown here. Notice that as you drag the pointer changes to a pointing hand.



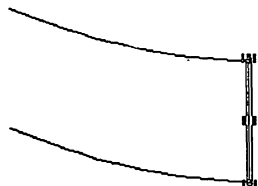
5. Select the **Join** command. The elements are joined.
6. Repeat steps 4 and 5 to join the last curve section to the other curves.

Next you'll draw the bottom half of the first wavy line and join it to the top half:

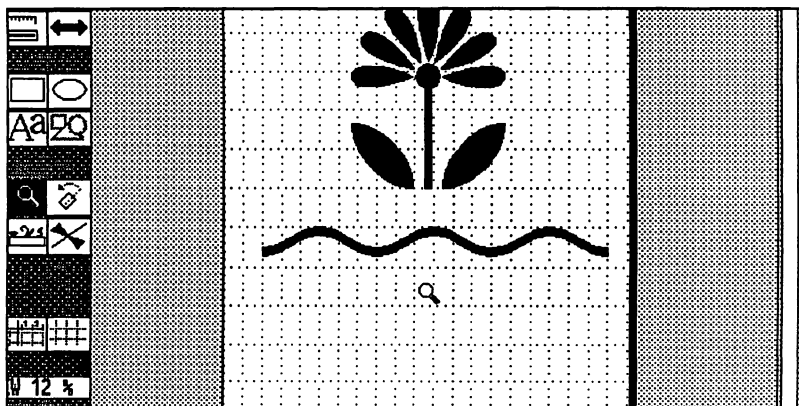
1. Click on the Selector icon. Select the wavy line. Copy the line by shift-dragging it. Place the copy one grid point below the first wave.



2. Select the Magnifier and enlarge the right ends of both lines.
3. Draw a short vertical connecting line between the two end points using the Quill.



4. With the Plane tool, select the end points of the upper and lower waves and the end points of the short connecting line. Then choose the Join command from the Arrange Menu to attach the connecting line to the waves.
5. Select the Magnifier and adjust the view so that the entire picture appears on the screen. Press the F10 key to turn the fill on. You'll see the first completed wave below the flower.



6. Select the **Move** command from the **Edit** Menu. When GEM Artline displays the **Move Object(s)** dialog, enter the values shown here and click on **OK**.

Move Object(s)			
Move	<input type="button" value="Left"/>	<input type="button" value="Right"/>	by 00.00 inch
Move	<input type="button" value="Up"/>	<input type="button" value="Down"/>	by 00.50 inch
		# of copies	02
		<input type="button" value="OK"/>	<input type="button" value="Cancel"/>

All three waves are completed. With the **Selector**, shift-click to select each one; then choose the **Group** command from the **Arrange** Menu.

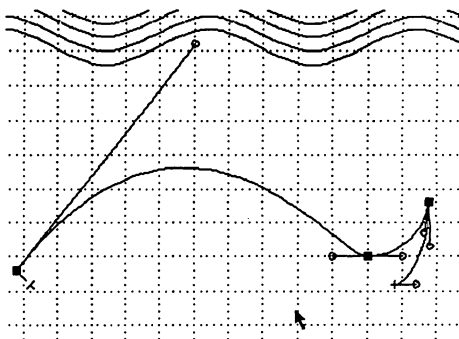
Now you're ready to draw the fish.

Drawing the Fish

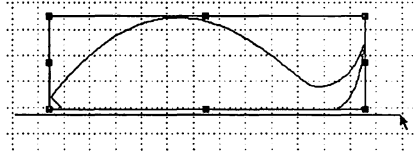
If you look closely, you'll notice that the fish is perfectly symmetrical. Draw the top half of the fish first and then flip it, both to save time and to copy the fish more exactly:

1. Use the **Quill** to draw the top half of the fish. Start at the head.

The completed half should look like this:



2. Make sure that the top half of the fish is selected. Choose **Flip** from the Edit Menu. The Flip Selected Object(s) Dialog appears.
3. Hold down the Shift key and use the pointer to draw a horizontal flip line below the top half of the fish. When the View Box displays 0° release the mouse button.



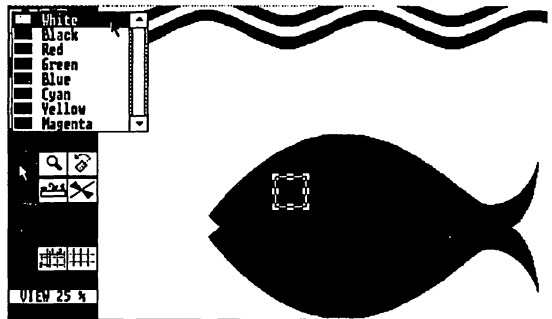
When you release the mouse button the fish half is copied and flipped.

4. Click on the Selector. Select the lower half of the fish and position it exactly below the upper half.
5. Connect the two halves at the end points of the tail with the Plane tool and the Join command.

Now draw the fish's the eye:

1. Click on the Ellipse icon. Draw a small circle for the eye. The circle is drawn black; you'll have to change it's color.
2. Click on the Fill Color icon and select White.

Finally, select the eye by pressinging the Control key as you click on it; then Shift-click on the fish. Group the eye and the fish by typing **◆ G**.



Adding the Frame

To place a border around your picture, you'll use the symbol named "FRAME" included in the symbol library file EXAMPLES.SYF.

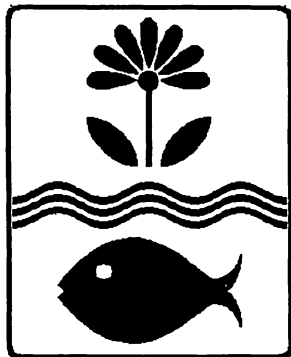
Follow these steps to align the elements in your picture before adding the frame:

1. Make sure that all adjacent elements have the same amount of vertical space between . With the Selector, reposition them if needed.
2. Type **◆ S** to select all of the elements. Center the elements by choosing **Align Center** from the **Arrange** Menu.

Now add the frame:

1. Choose **Load Symbols** from the **Symbols** Menu. In the **ITEM SELECTOR** double-click on the name "EXAMPLES.SYF."
2. When the symbol file is loaded, the **Symbol Selector** appears on the right side of the screen. Click on the name "FRAME" in the list of symbols. The symbol viewer displays the frame.
3. Click on the **Symbols** icon in the **Toolbox**. Draw a rubber rectangle that surrounds the flower, waves, and fish. When you release the mouse button **GEM Artline** draws the frame over the other elements.
4. Move the frame to the background by choosing **Put In Back** from the **Page** Menu.

You've finished the picture—choose **Save As** from the **File** Menu. When the **ITEM SELECTOR** appears, type the name of the file in which it will be stored.



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